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ABSTRACT

Characteristics and contributions of collaborative research studies to educational practice are explored in this paper. Definitions of collaborative research are presented which note its multiple roles and similarity to action research. Reasons for conducting collaborative research are given, centering around increased use of research outcomes, facilitated investigation, and reduced time lapse before application. The strategy of involving all school practitioners in research is illustrated through four models: (1) interactive research and development (using teams of researchers and participants); (2) collaborative research with an entire school faculty; (3) collaborative research with an entire school district; and (4) university-based research with cooperating school personnel. Eight studies are summarized in which the collaborative research strategy was limited to teacher participants: (1) teachers' techniques with classroom disruptions; (2) effects of reducing class size; (3) process-centered teaching; (4) teachers' perceptions of effective bilingual instruction; (5) acquisition of writing literacy; (6) common issues of interest to a school faculty; (7) how children learn to read; and (8) writing instruction at the elementary level. Conclusions based on developments and outcomes of collaborative research in education are stated. An annotated bibliography of 18 studies is appended. (FG)

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RESEARCH ON TEACHING: IMPLICATIONS FOR PRACTICE

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COLLABORATIVE RESEARCH

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Introduction

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SP 021 097

COLLABORATIVE RESEARCH*

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William J. Tikunoff

Introduction

In August 1975, we proposed that persons conducting research on teaching might profit from utilizing other research and development (r and d) strategies in addition to the linear strategy which was predominant at that time. The basis for this recommenation built from demonstrated inadequacies of the characteristics and outcomes of the linear strategy.

Within linear r and d, improvement of education, particularly improvement of educational activities and processes that occur in classrooms, is perceived as a "goods"-oriented process. Research generally is conducted, by persons knowledgeable about, but usually not involved in, the conduct of classroom instruction--as Corey (1953) indicated, by "professional students of education not by practitioners" (p. 3). Products applying this research likewise are developed largely by persons other than practitioners. These products then are disseminated to the practitioners, and eventually are assumed to be adopted by them and applied to improvement of schooling programs.

Such an approach was advocated during the period of educational reform in the 1960's (for example, see Clark and Guba, 1967) and by 1975 had became the primary mode for conducting a considerable portion of educational r and d. However, after some ten years and the expenditure of millions of dollars on r and d efforts, it was apparent parent that the linear r and d strategy had not been as successful as hoped. In a 1976 paper, we pointed out several strengths and weaknesses of the strategy. Using a linear approach, research on teaching had identified several ways in which teaching could be improved and had indicated that those aspects of teaching that were related to student performance most often included combinations, sequences, or chains of teaching skills and/or teacher student interactions rather than single teaching skills or competencies. But teacher training and classroom-based teaching seldom took this information into account. Likewise,

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large numbers of teacher training products applying research findings had been developed, but these products were being used only by a few local education agencies and institutions of higher education. Further, since it had taken eight to ten years from the time of the original research to develop, test, and disseminate these products, those research findings that did find their way into classrooms frequently were out-of-date and/or irrelevant to the improvement of educational opportunites for teachers and students given the societal conditions and educational expectations of the current decade.

Guba and Clark (1974), looking at educational r and d from an historical perspective, also criticized the linear approach which they had earlier advocated (see Clark and Guba, 1967). Moving from the use of linear r and d to a new concept, knowledge production and utilization (KPU), they noted that:

> The inadequacies are embedded in the conceptual view of educational KPU that has been adopted, even if only implicitly, to undergird these policies [the reference is to policies for improvement-oriented change in educational practice], i.e., an engineered "systems view" of educational r and d which presupposes and/or attempts to effect a linked set of productive agencies following the R-D-D-A [research, development, dissemination, adoption] continuum to achieve a commonly agreed upon (or implicitly understood) goal of production. (p. 2)

They suggested that such a view had ignored the goals of individual KPU practitioners and individual KPU agencies in the total educational community and, instead, had established unachievable aspirations.

In a later restatement of the need to consider alternative strategies for conducting r and d on teaching, we noted that conceptualization of the teacher as a passive consumer at the end of the r and d process could account, in part, for the failure of many educational innovations (Tikunoff, Ward and Lazar, 1979).* Further, we suggested that separation of each r and d function (e.g., research, development, dissemination, adoption) produced constituent groups, each responsible for a separate aspect of the school improvement process and each isolated from the others. In r and d on teaching, this imposed separation, reinforced by increased specialization within each r and d area, was seen as escalating the feeling of isolation reported by

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*The assertion of such concerns is not new. For example, advocates of action research (e.g., see Corey, 1949, 1952, 1953; Wann, 1952; Wrightstone, 1949; Chun, Cook and Harding, 1948) and cooperative studies (e.g., see Herrick, 1948) stated similar concerns as the rationale for moving to alternative r and d strategies. Similarities and differences among these strategies and today's collaborative research approach are discussed later in this paper.

teachers who merely were asked to adopt and use r and d outcomes rather than be involved in the process of school improvement from the inception of an r and d effort. As a result, we contended that teachers frequently were given answers to questions they never asked or problems they considered less than critical. In addition, when "required" to apply research findings in their classrooms, we suggested that teachers found language common to the specialized r and d communities to be largely unfamiliar and uninterpretable.*

As alternatives to the linear r and d strategy, a number of recent educational efforts have utilized approaches that involve teachers and other practitioners in various stages of the r and d process. The purpose of this paper is to present information on several such collaborative research efforts and to discuss the contributions to advancement of knowledge and improvement of schooling practices achieved through the collaborative research on instruction that has been conducted within the last few years. In addition, the paper begins with a review of the various definitions given to collaborative research (historical as well as recent) followed by an expanded discussion of the reasons collaborative research on teaching is needed in order to advance knowledge and improve practice in the field of education.

Definitions of Collaborative Research

Attempts to define and utilize research strategies that involve practitioners have been part of the educational milieu for a considerable period of time, although the extent to which collaborative strategies have been utilized in the conduct of research has varied at different points in time. Hence, definitions of collaborative r and d under a variety of labels may be traced over the past few decades. For example, in 1948 Chun, Cook and Harding provided a definition of "action research:"

> [Action research] is a field which developed to satisfy the needs of the socio-political individual who recognizes that, in science, he can find the most reliable guide to effective action; and the needs of the scientist who wants his labors to be of maximal social utility as well as of theoretical significance. (p. 44)

They went on to specify that the action researcher must deal with problems that are of interest to the community in which the findings will be applied and must define the problems in such a manner that they become amenable to investigation in an existing social setting. They

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*The word "required" is placed within quotation marks because research on adoption, adaptation, and utilization of educational innovations suggests teachers employ a high degree of independence in determining whether they will, in fact, apply new knowledge, new processes, etc.

suggested that four varieties of action research might be conducted: (1) diagnostic, in which the existing situation is described, diagnosed, and recommendations made regarding remedial measures; (2) participant, in which the people who are to take action are involved in the research process from the very beginning; (3) empirical, in which something is done and a record is kept of what was done and what happened over a period of time; and (4) experimental, in which more than one way to accomplish something is tried and information collected and compared regarding what is done and what happens under the various techniques.

Corey (1953) indicated that the expression "action research" came from two sources. One was the work of Collier (1945) in which he stated:

> . . . since the findings of research must be carried into effect by the administrator and the layman, and must be criticized by them through their experience, the administrator and the layman must themselves participate creatively in the research, impelled as it is from their own area of need. (p. 276)

The second was the work of Lewin (e.g., see Resolving Social Conflicts, 1948) and his students, which also stressed cooperative work by scientists and what Lewin termed "men of action." Corey stressed that action research involved the cooperative study of problems. He used Lippitt's (1949) criteria to specify the requirements of cooperative study. These were that "the potential consumers of the data are collaborators in the planning, the measurement operations, and the analysis and interpretation of the data" (p. 9).

Thus, although the action research to which Corey and others referred focused largely upon curriculum rather than teaching issues, the underlying premises and the requirements of the action research conducted some 30-40 years ago were similar to those applied in the more recent collaborative research efforts that are the focus of this paper.

However, during the interim between the early 1950's and the late 1970's the definition of action research appeared to change. The criteria that scientists and practitioners work together to study and solve problems in a rigorous scientific manner seemed to be reduced to inquiry done by the practitioners themselves. For example Good (1963) stated, "Such research . . . is a program conducted by teachers as part of their teaching activity, usually with the advice and cooperation of research specialists" (p. 322). Borg (1965, p. 319-322), in an early edition of his research methodology text, further implied that action research was conducted by teachers and that it was not as rigorous or difficult an approach to research as "traditional" methods.

In part, such shifts in the definition of action research may be explained by the move to emphasis upon application of linear r and d procedures to education problem solving. Nonetheless, the research

utilization issues which pervaded the original development of action research continued to pose problems for the educational research community and the advancement of knowledge about teaching pointed out even more strongly the importance of teacher participation in the research process (see next section of this paper for further discussion). Thus, as noted earlier, beginning in the mid-1970's, new and expanded views of collaborative research in education began to appear.

For example, in 1976 we proposed a research and development strategy which we termed Interactive Research and Development on Teaching (IR&DT). As defined in the study of the implementation of this strategy that subsequently took place,

> IR&DT places teachers, researchers, and trainer/developers together to inquire as a team, beginning with the initiation of the r and d process, into those questions, problems and concerns of classroom teachers. An IR&DT team is charged with conducting research and concurrently developing training based on both their research findings and the research methods and procedures employed in their study. Decisions are made collaboratively. For IR&DT, this means that each member of the team has parity and shares equal responsibility for the team's decisions and actions from identification of a question/problem through completion of all resultant r and d activities. (Tikunoff, Ward, and Griffin, 1979, p. 4)

Building from this general definition, we advanced six features that must exist in order for an r and d effort to be judged interactive. These are: (1) the team minimally is composed of a teacher, a researcher, and a trainer/developer; (2) decisions regarding research questions, data collection procedures, materials development, etc., are a collaborative effort; (3) the problems to be studied emerge from the mutual concerns and inquiries of the team and, above all, attend to the teacher's problems; (4) the team attends to both research and development concerns with knowledge production and use both receiving attention from the beginning of the r and d effort; (5) the r and d effort attends to the complexity of the classroom and at the same time maintains the integrity of the classroom; and (6) the r and d process is recognized and used as an intervention (professoinal development) strategy, while at the same time rigorous as well as useful research and development are carried out. Within these requirements,

> . . . collaboration is viewed as teachers, researchers, and trainer/developers both working with parity and assuming equal responsibility to identify, inquire into, and resolve the problems/concerns of classroom teachers. Such collaboration recognizes and utilizes the unique insights

and skills provided by each participant while, at the same time, demanding that no set of capabilities is assigned a superior status. It assumes a work with rather than a work on posture--the latter, in the opinion of the authors, being more frequently the modus operandi when teachers are asked to join researchers or trainer/developers in a linear r and d endeavor. (Tikunoff, Ward and Griffin, 1979)

Oja and Pine (1981) added to the definition of collaborative r and d by describing what they termed "collaborative action research". They suggested that six elements characterized such research. These characteristics combine features of the research effort itself with the professional development outcomes required of or attained by the participants. They are:

1. Research problems are mutually defined by practitioners and researchers.

2. University faculty and classroom teachers collaborate in seeking solutions to practitioners' problems.

3. Research findings are used and modified in solving problems.

4. Practitioners develop research competencies, skills, and knowledge, and researchers reeducate themselves in field-based and naturalistic research methodologies.

5. Practitioners as a result of participating in the adaptation process are more able to solve their own problems and renew themselves professionally.

6. Practitioners and researchers co-author research reports. (p. 27)

Little (1981) outlined three features of collaborative r and d in education that incorporate many of the notions posed above. These are:

1. The connection between theory and practice is accomplished at every stage and not attempted only as an afterthought upon presentation of findings.

2. The interests, questions, and curiosities that emerge from local experience are represented in the research design, along with interests, questions, and curiosities drawn from theoretical and empirical literature.

3. Sustained collegial work involving research and school personnel provides the opportunities for a reciprocal working relationship between research and practice in which both gain opportunity for reflection and for unexpected insight into situational realities. (p. 4)

Fisher and Berliner (1979) suggested yet another form of collaborative research which they labeled "clinical inquiry." In describing the essence of clinical inquiry, they quoted a statement from Dewey (1929) in which Dewey noted that the mode of inquiry to be adopted in education had to be one in which "educational practices provide the data, the subject matter, which form the problems of inquiry. [Moreover, these practices have to be] . . . the final test of value of the conclusions of all researchers" (p. 3).

Fisher and Berliner went on to point out that cooperative work by the teacher and the researcher can generate knowledge about a broad range of teaching/learning phenomenon while the team also is working on a specific classroom problem situation. They noted that open discussion between the clinician and the teacher, and mutual "negotiated" agreement on the goals of the inquiry and acceptable evidence for change were essential components of clinical inquiry. The combination of rigorous research and clinical practice was proposed as a means for studying educational phenomena that are complex, dynamic, and extend over time.

Using the above definitions of collaborative r and d, three factors seem to undergird the current work in this area. First, researchers and practitioners work together. Second, they focus on "real world" as well as theoretical problem. Third, the participants gain mutual respect for one another and grow in their insight into and understanding of instruction. In addition, Tikunoff, et al., and Little add a fourth requirement--is concerted attention to development and implementation issues from the beginning of the r and d process.

Some aspects of this definition are consistent with two definitions for collaborative given in Webster's New World Dictionary. Here collaboration is defined as: to work jointly with others esp. in an intellectual endeavor, and to cooperate with an agency or instrumentality with which one is not immediately connected. (Hopefully, a third Webster's definition -- to cooperate with or assist, usually willingly, an enemy of one's country and esp. an occupying force -- does not apply to collaborative research efforts in education.)

However, to carry out collaborative research and development that meets the above criteria and at the same time produces rigorous as well as useful outcomes at reasonable cost is not a simple task. Hergendoller (1979) outlined several factors that must be given particular attention in order to accomplish successful collaborative research. The factors revolve around the composition of the team. As Hergendoller states:

> It is important to recognize the very real differences which exist in their [e.g., teachers, researchers, trainer/developers] ways of thinking about the social world of schools, and not to sweep under the rug an important -- and ultimately productive -- distinction between the concerns and expertise of these individuals. . . Although the members of the collaborative team may make sense of the world as a result of differing epistemological stances (MacKay, 1978), they are skilled professionals with their own distinctive capabilities. This diversity is to be celebrated, for the outcome of the effort to labor together has the potential to exceed the sum of the individual contributions. (pp. 3-4)

Having pointed out the strengths of the multiple roles represented on a collaborative research team, Margendoller indicated that one factor that must be considered is the possibility of conflict among team members. He emphasized the importance of ironing out such conflicts based on a desire to achieve goals that had been established mutually by the team. He stated, "No set of capabilities held by any individual can be considered superior to those capabilities held by the others, and the concerns of each team member must receive the attention of the remaining members" (p. 6). He then suggested that the researchers and teachers on the team will talk differently and talk about different things. As noted by Greene (1979) he indicated that words like "variable," "practice," and "evaluation" will gain special meanings depending upon the context in which they are used and the training of the individual who uses them, and suggests that:

> In noncollaborative research and development, conceptual communication between researchers and teachers is often strained, or nonexistent. Common linguistic conventions are not established, and a research design which has been carefully constructed by the researcher may look like so much gobbledygook to the classroom teacher. Given this natural breach of language, and more importantly, the thinking it represents, a collaborative research effort must take special pains to ensure that the different members of the collaborative team use the same language and understand each other's concerns. (p. 11)

Much of the above discussion has stressed the involvement of the teacher (or other practitioners) at all stages of the collaborative inquiry process. Kennedy (1979) suggested that this need not necessarily be the case. She outlined five collaboration roles that teachers might play depending upon the mode of inquiry. While the individuals who provided the earlier definitions may not concur with Kennedy's views, given the collaborative research to be discussed later, these roles warrant consideration.

One role is as a model of teaching. In this role the teacher is observed while teaching and may participate in various interviews but does not engage in other facets of the r and d effort. Another is as a model/participant. Here the professional performance of the teacher is observed and, in addition, the teacher receives verbal and/or written feedback from the observer which, in turn, may stimulate a dialogue that leads to reformulation of the research question. A third role is as a data collector. Teachers collect data in their own classrooms and/or in the classrooms of other teachers. They meet with the researchers to discuss and interpret the data they collect. A fourth role is as a co-investigator. In this role the teacher assists in all stages of the r and d effort. A fifth role is as a practitioner consultant. Teachers in this role describe and analyze a wide variety of classroom variables and dynamics in terms that are understandable to both researchers and practitioners. They help interpret and provide links between researchers and teachers filling one or more of the other four collaborative roles. Regardless of the role they play, Kennedy suggests that teachers broaden the problems to be studied and provide insights into teaching and learning that cannot be obtained without their involvement. In this regard, she echoes the views of the researchers whose concepts of collaborative research were presented above and other researchers in the field of education. Further elaboration of these reasons for conducting collaborative r and d follows in the next section of this paper.

Reasons for Conducting Collaborative Research

The beginning of this paper discussed one of the major reasons for conducting collaborative r and d. That is to increase the relevance of the research to the problems and concerns of the educational practitioner and, thus, to increase the likelihood that r and d outcomes will be utilized by practitioners to improve educational practice. An equally compelling reason is that involvement in the r and d process of teachers (and other practitioners) is required in order to investigate and understand the complexities of teaching and learning as they occur in the classroom. The types of inquiry advocated as the methods most likely to yield salient new understandings of classroom processes require acquisition of phenomenological information and insights that must be provided by the practitioners. Yet another reason is that attention at all stages of the r and d process to (a) the connections between theory and practice and (b) the use of the research variables, data collection procedures, and the research findings as means for improving practice can shorten the time lapse between advancement of theoretical knowledge and its application in instruction. Further discussion of each reason follows.

Increase Use of R and D Outcomes

A common theme advanced by those who have advocated collaborative r and d has been to involve practitioners in the entire r and d process in order to increase the applicability and usefulness of the r and d outcomes. Clark (1976), for example, stated:

> The process of inquiry will have to be brought closer to the point of effective action in education, i.e., will involve the direct participation of practitioner agencies in all the process of educational R and D. (p. 7)

The assumption is that research and development that involves practitioners will be perceived as relevant and useful by them and, hence, use of that research to improve practice will occur. The next section of this paper reports on the findings of several studies of collaborative r and d. Data from two of these studies illustrate the potential of collaborative r and d to achieve such an expectation.

In our own study of Interactive R and D, we asked a jury of teachers who had not been involved in the actual research efforts to judge the usefulness of the outcomes. In terms of usefulness and applicability of the research done by the San Diego IR&DT team (see discussion in later section of their study of classroom distractions), the jury members indicated that three aspects of the research were useful and applicable. First, after reading the research report (particularly the teachers' case studies), the jury members indicated they were able to identify similar variables in their own classrooms. They noted that the language used to describe the variables was teachers' language so another teacher could grasp the concept. As one juror said, "The concept was sufficient for me to conjecture or to extend and elaborate in my own head what I could do with that. What I'm reading in this report is sufficiently familiar conceptually that I can [use it] in my own situation" (Tikunoff, Ward, and Griffin, 1979, p. 317). Second, the jurors pointed to the fact that the study identified specific things teachers could do to improve practice. Third, they noted that the data collection methods could be used by teachers to look at their own classrooms and categorize their own behavior. A juror stated, "It's the concepts that are in this work that assist me . . . even though the specific finding [thing to do] isn't directly applicable, I can use their methods to find my own."

Van Nostrand, Pettigrew, and Shaw (1980) also came to several conclusions that support the argument that collaborative r and d produces results that will be used by practitioners.

After reviewing the literature that presented the most recent theories on writing instruction, surveying existing writing methods texts, and working with teachers to determine what sorts of writing instruction actually goes on in classrooms, They stated:

> . . . any systematic improvement in writing instruction must evolve from the context of writing instruction; the design for such improvement should be based on what teachers actually do and framed in terms of how they perceive what they do. And collaborative research has the capacity to derive such information. (p. 121)

Fisher and Berliner (1979) discussed additional explanation, beyond the absence of practitioner involvement, for the lack of impact of research on practice. These included "the lack of rewards for university-based professional people who engage in helping rather than publishing . . . [and] the continuing reliance on 'reports' as the final product of many projects, with the accompanying belief that reprints of reports lead to changes in classroom behavior of teachers and students" (p. 45). From this standpoint, the participation of and status given the university professional who does collaborative research while helping others and the involvement of a trainer/developer in the collaborative process may be seen as features that add to the capability of the strategy to impact educational practices that are outside as well as within the K-12 school setting.

In sum, as Stake indicated:

> During the 1970s there was increasing attention in educational research to the role of the client or user. I believe that this emphasis will continue in the 80s. And I believe methods of research will continue to evolve in ways that observations are made and shared so as to be more comprehensible and useful to users. (1980, p. 1)

Facilitate Investigation of the Complexities of Teaching and Learning

The complexity of classroom life has been studied, described and discussed by researchers such as Jackson (1968) and Smith and Geoffrey (1968). More recently Bronfenbrenner (1976) outlined an ecological perspective of education that presented 20 propositions related to analysis of the properties of the system at four levels of complexity. Tikunoff (1977) noted that "what we call classroom teaching and learning is embedded in a complex myriad of interdependent variables, all of them situationally specific" (p. 2). Doyle (1977) reminded us that:

> It is clear that classrooms are not single-purpose "learning" environments that exist for short periods of time as is often the case in laboratory studies. Nor is the teacher's task confined to a few selected behaviors that occur during a two-hour period in October, as is often assumed in many observational studies. (p. 4)

Kennedy (1977) also referred to "the complex array of human/environmental behaviors and variables which influence classrooms events, phenomena, and processes" (p. 2).

As reported by Mishler (1979), Delamont (1976) demonstrated that "an adequate understanding of the meaning and significance of profile differences for classroom behavior and learning can only be provided

through information about the contexts of behavior: the subject matter taught, the physical setting of the classroom, the personal 'front' of the teacher, and student opinions and interpretations of teacher behavior" (p. 7). Goodlad (1977) made a similar point relative to the school curriculum:

> Clearly, there are quite different curriculum domains, what teachers think it is, what observers perceive it to be, and what students perceive and experience. And so there are at least three data sources to be utilized in arriving at conclusions about what the curriculum is. (p. 5)

Ward (1977) indicated that to gain an understanding of the phenomena of education, knowledge needed to be obtained regarding: (a) the perspectives of those individuals who engaged in teaching and learning, (b) the processes of teaching and learning, and (c) the context within which teaching and learning occur. Bronfenbrenner (1976) and others, e.g., Carini (1975), emphasized the importance of the phenomenological perspective. Participants' views of the situation, including a multiplicity of meanings when more than one individual is involved, are considered essential for understanding educational phenomena. Further, data collection methods are recognized as influencing what is observed and, thus, what is "known." Perceived reality, particularly participants' perceptions of the conceptual definitions explicit and implicit in a given research design, are considered to be especially important for validation of experimental manipulations and outcomes.

Thus, awareness of the multi-dimensionality of teaching and learning as they occur in the classroom has introduced a need for data acquisition and data analysis procedures appropriate to this complexity. A predominance of researchers writing in this area, question the suitability of traditional research methods. Statements by Bronfenbrenner and Mishler sum up these views. According to Bronfenbrenner's (1976) opinion:

> To state the thesis in its briefest and boldest form, contemporary educational researches are characterized by experimental designs that are primarily statistical rather than scientific; that is these designs enable us to predict the concommitants of certain combinations of conditions but not to understand the causal connections that produce the observed effects. (p. 159)

Mishler (1979) identified a paradox:

> One side of the paradox is that we all know that human action and experience are context dependent and can only be understood within their contexts . . . We rely on context to understand the behavior and speech of others and to ensure that our own behavior is understood, implicitly grounding our interpretations of motives and intentions in

> context . . . the other side of the paradox is that this ordinary and commonsense understanding of meaning as context dependent has been excluded from the main tradition of theory and research in the social and psychological sciences and in the application of this tradition to educational research. As theorists and researchers, we tend to behave as if context were the enemy of understanding rather than the resource for understanding which it is in our everyday lives. (p. 2)

In the search for research methods -- more specifically data acquisition and data analysis methods -- that facilitate study of the multiple dimensions, variables, meanings, etc., that appear to be simultaneously occurring in the classroom, considerable attention is being given to naturalistic study of classroom events and processes and to procedures for obtaining multiple interpretations of as many dimensions, events, etc., as possible. Naturalistic study involves natural setting, natural treatment and natural behavior as discussed by Tunnel (1977). Most often such studies emphasize descriptive research that captures the full complexity of situational, experiential, and communicational variables (see Tikunoff, 1977). The work of ethnomethodologists, ecologists, sociolinguists, and phenomenologists is germane. Understanding what is going on develops from many hours of sensitive observation (e.g., see Glaser and Strauss, 1967; Carini, 1975; Miller, 1977). The views and perspectives of participant as well as nonparticipant observers of a phenomenon are obtained. In terms of classroom research:

> There appears to be a greater respect for the setting in which teachers work, reflected both in the inclusion of context variables in data collection and analysis and in the more modest expectations concerning the extent to which the classroom can be easily changed . . . there seems to be an emerging awareness of the complexities inherent in the practitioner's world and an attempt to account for this complexity in designing research, interpreting findings, and suggesting applicability. (Doyle, 1977, p. 5)

To carry out such research without the full cooperation and collaboration of the person responsible for maintaining classroom life -- namely, the teacher -- is impossible. Teacher (and student) interpretations of the meanings of events must be obtained. Natural classroom settings must be maintained even though a vast array of variables is studied. Whenever data collection procedures intrude upon that naturalness, this must be recognized, described and the results explained. When the multiplicity of possible variables of interest must be reduced, these decisions must be based on insights regarding which comprise the essence of the teaching or learning phenomenon being studied and which violate it. The teacher has such information. To use it should add to our understanding of classroom teaching and learning and increase the likelihood that the information necessary for gaining new understandings will be obtained.

Fisher and Berliner (1979) support such views when they suggest that "the complex, dynamic and extensive characteristics" of classroom teaching/learning phenomenon call for use of a range of inquiry modes in addition to the "conventional" research process.

Hence, some sort of collaboration may well be necessary to carry out even the most basic research on teaching if, as stated by Kerlinger (1977), "the purpose of scientific research is to understand and explain phenomena" (p. 5), and as noted by Geertz (1980, p. 67), "systematic unpackings of the conceptual world" are needed.

Reduce Time Lapse Between Advancement of Theoretical Knowledge and Its Application in Practice

The amount of time required to move from the initiation of a research effort to wholescale use of the findings from that effort in classrooms has been another area of concern to both researchers and practitioners. Those who are responsible for improving practice are as anxious as the researchers to put significant new information to use. Several features of collaborative r and d have been designed to facilitate rapid transfer of useful new knowledge to application in the classroom.

One approach (IR&DT) places a trainer/developer on the r and d team from the beginning stages of the r and d effort in order to "introduce the capability for concurrent attention to and development of training procedures" (Tikunoff, Ward, and Griffin, 1979, p. 14). As we noted in the IR&DT study report (see discussion), such early participation of the trainer/developer increases the likelihood that training programs will be developed that utilize the research data collection procedures to build other teachers' capability to inquire into the same aspects of teaching in their own classrooms even while the original research study is still underway. In addition, inclusion of a trainer/developer on the team eliminates the need for a "new" person to become familiar with the purposes, variables, findings, etc. of the research in order to move to the application stage. The 15-1/2 month timeline required in the IR&DT Study to complete a research effort and design and test a training program speaks to the shortening of the time lapse that may be accomplished.

Another dimension of collaborative research that may reduce the time lapse is the extent to which participation leads the researchers, teachers, trainers, etc., to apply the theoretical constructs to improvement of practice within their own professional realms from the initiation of the r and d effort. For example, Fisher and Berliner (1979) note that research, development, and implementation functions are subsumed into the r and d activity under their clinical inquiry approach. They assume that the inquiry will bring about "positively valued and substantial change, at least where the field work is conducted" (p. 45). Cahen, Filby, McCutcheon, & Kyle (in press) speak of the increased understanding of research and educational practice they gained as a result of participation as researchers on collaborative

r and d teams. Oja and Pine (1981) likewise speak to the significant learning and growth that occur where teachers and university researchers work together in carrying out research to solve problems that concern themselves and the schools. Additional information follows later in this paper on several of these studies and this contribution of collaborative research.

Collaborative Research as a Strategy

Because collaborative research as a formal procedure has re-emerged relatively recently in the conduct of educational research in general, there are few completed pieces of research from which to draw. These fall into two general categories. One group of research has focused on the process of including teachers in the conduct of research studies and its impact upon the participants. In some instances, these studies also have attended to the rigor and usefulness of the collaborative research outcomes. The second group has reported findings produced using collaborative research. The studies of the collaborative process will be discussed in turn in this section. Research by using the collaborative r and d is discussed in the following section.

The focus of collaborative research taken in this paper is upon involvement of the classroom teacher in the process of participating with researchers and others in the conduct of inquiry into classroom processes. However, the collaborative process has spread quickly to involve others as well. Thus, for purposes of examining collaborative research as it is manifested today in educational research, the participation of school practitioners needs to be extended to include principals, administrators, and central administrative office personnel.

The following discussion takes up in turn four general configurations of collaborative research currently under consideration in the literature. These are: (1) Interactive Research and Development, a model developed and studied in both a university and a local educational agency setting; (2) collaborative research conducted with an entire school faculty, wherein teachers and the principal were the schooling practitioners participating; (3) collaborative research with an entire school district, in which collaboration was between researchers and various school district personnel from the central administration to the classroom teacher; and (4) university-based collaborative research, in which the primary goal is to establish relationships for the purpose of the conduct of educational inquiry and staff development between university staff and schooling practitioners. Although these configurations overlap somewhat, we have selected these four categories as a way of descriptively emphasizing how they differ. Examples for each category are provided. Included in the discussion are those findings about the process of collaborative inquiry if any, emerging from the study of each strategy.

Interactive Research and Development (on Teaching)

As noted earlier, we proposed Interactive Research and Development on Teaching (IR&DT) in 1975 as an alternative educational r and d strategy. The basis for this recommendation built from demonstrated inadequacies of the characteristics and outcomes of the commonly-used linear r and d strategy. Although use of this strategy currently has expanded to include a variety of practitioner members on the research team, for purposes of this discussion we will focus on the original teacher focus of the interactive process.

The National Institute of Education funded an investigation of the implementation of the IR&DT strategy in 1975 to:

1. investigate and understand the process of implementing IR&DT in order to identify and describe the requirements and characteristics for "successful" use of the strategy;

2. determine whether the r and d outcomes that resulted from an IR&DT approach provided important and useful new information, procedures, and processes to the field of education while successfully achieving (maintaining) commonly accepted r and d standards; and

3. determine what changes, if any, in persons and institutions might result from participation in IR&DT.

To review, the underlining principles of the IR&DT strategy place teachers, researchers, and trainer/developers together to inquire as a team into those questions, problems, and concerns of classroom teachers. An IR&DT team is charged with the task of conducting research and concurrently attending to the development of training based both on their research findings and the methods and procedures employed in their study. Decisions are made collaboratively, i.e., teachers, researchers, and trainer/developers working with parity and assuming equal responsibility to identify, inquire into, and resolve the problems/concerns of classroom teachers. Such collaboration recognizes and utilizes the unique insights and skills provided by each participant while, at the same time, demanding that no set of capabilities is assigned a superior status. It assumes a work with rather than a work on posture -- the latter more frequently being the modus operandi when teachers are asked to join researchers or trainer/developers in a linear r and d endeavor. Parity is granted when team members agree to participate in IR&DT. Equal sharing of responsibility is achieved only when each team member assumes his or her share of the research effort based on his or her unique abilities and insights.

In the original IR&DT study, the strategy was implemented at two sites--one in an urban setting in California, the other in a rural setting in Vermont. The settings were selected purposely in order to observe IR&DT implementation under diverse circumstances.

The California site was located in the San Diego Unified School District, and consisted of four teachers, one researcher, and one trainer/developer, all on the school district staff. The team focused its research on the strategies and techniques which classroom teachers use to cope with distractions to classroom instruction and the effectiveness of these techniques in eliminating the distractions. The data set included quantitative coding of occurrences of distractions and coping strategies, narrative descriptions of teacher-student interactions, and other relevant context information for each classroom (see Behnke et al; 1981, in next section for a more detailed description of this research).

The Vermont site included two cooperating institutions--the University of Vermont and the Underhill Independent School District. This team included three teachers, one researcher, and two trainer/developers. The team focused its research on the relationships between the mood of the teacher and the teacher's classroom supportive instructional behavior. The data set included narrative descriptions of what occurred in each classroom during reading lessons and during each teacher's most difficult time of the day. Teacher ratings of a mood objective checklist and observer-teacher interviews also were included.

The activities of the two IR&DT teams were observed from the inception of the research process through completion of both the final research and training reports. Analyses were made of team interactions, decisions, and technical assistance requirements. The contributions of each team member were documented at each step in the r and d process. The "products" of the effort -- that is, the research findings and the teacher training that was developed and tested -- were judged for their rigor and usefulness compared with other educational r and d outcomes. Six notable findings emerged from this study. These are as follows:

1. The characteristics, skills, and previous experience of participants appear to affect the degree to which IR&DT is implemented with high occurrence of/congruence with the essential features of the strategy. The presense of these features, in turn, is related to the rigor and usefulness of the r and d outcomes.

2. Commitment to educational r and d and previous involvement in such efforts by the participating institutions also influences the conduct of IR&DT.

3. Orientation to IR&DT is important. It should be designed to fit the needs and context of the participating people and institutions. If the required participant skills do not exist, training in these skills should be included.

4. Technical assistance should be available throughout an IR&DT effort.

5. The typical time lag between research and development can be reduced with the IR&DT strategy.

6. IR&DT implementation can be cost-effective, resulting in research which is judged as rigorous as traditional educational research while concurrently divising and implementing staff development based on findings.

As a review/critique activity, a meeting of policy decision-makers from local education agencies and institutions of higher education was convened to examine the results of the IR&DT study. As reported by Lieberman (1979), they advanced 14 recommendations to NIE with relation to further implementation of IR&DT, in particular, and collaborative research, in general.

1. IR&DT teams be extended to include other contexts in addition to those in the original study.

2. Roles other than teacher be studied to extend the r and d interaction (e.g., supervisors, teacher trainers, principals).

3. Commitments of the cooperating institutions be made explicit (substitute time, course credits, services, tenured professors, etc.)

4. Initiating institutions show some evidence of experience with collaboration.

5. The roles of researcher and trainer/developer be extended to include a larger pool (e.g., graduate students as researchers, supervisors as developers).

6. Communication of intra-school and inter-institutional linkages be clarified (e.g., regular meetings, newsletters).

7. Purposes for conducting IR&DT be clear (e.g., school improvement, new knowledge, new roles, etc.)

8. Some effort be made to protect IR&DT from being swped by other institutional demands (e.g., programs, mandates).

9. Provisions be made for technical assistance during all phases of IR&DT.

10. Provisions be made for advisory panel to review and to communicate with IR&DT team at regular intervals.

11. No less than two team members per site be selected to avoid isolation.

12. Orientation to IR&DT be given more time (up to 5 days).

13. Provisions for initiation of IR&DT be considered in light of school calendar (avoid September "start up").

14. Where possible, interactiveness be extended between IR&DT teams.

It should be noted that since this original study the IR&DT strategy has been used in two studies that are discussed later. Huling (1981) established a collaborative study between researchers and staff developers from among the Texas Tech University and Teacher Corps staffs and teachers of local school districts. Griffin, Lieberman, and Jacullo-Noto (1980) proposed further study of IR&DT by extending it to three varying contexts. Called IR&D on Schooling, they established teams on which the schooling practitioners were (1) teachers working out of a Teachers' Center, (2) representatives of several school districts working through an intermediate educational agency, and (3) high school teachers.

Collaborative Research with an Entire Faculty

Using a different type of collaborative research, a team of researchers from the Far West Laboratory for Educational Research and Development collaborated with an entire elementary school faculty over a two-year period in order to look at instruction ecologically. Each of the 11 teachers in the elementary school identified areas of concern, and questions were specified by teachers working with researchers. In addition, the researchers posed their own questions which were different than those raised by the teachers. Data collection was collaboratively performed, and teachers utilized narrative descriptions of their instruction as well as other synthesized data as feedback and as a basis for adjusting instruction. Results are reported later in this discussion (see Mitman et-al., 1981).

Hergendoller (1981) reflected on this experience by specifying three conditions which must be present for successful whole-school collaborative research:

1. Parity must be established and maintained between/among teachers and researchers. Parity is designed as "the establishment of mutual respect. . . when no set of professional capabilities among teachers and/or researchers is thought to be superior to those held by other members of the research team, parity has been established."

2. Reciprocal relationships must be established and maintained. Such relationships demonstrate a natural give-and-take, or as Webster states, there is "a mutual exchange of privileges in such relationships." Reciprocity occurs more frequently when each member of the research team has something valued to share with others. For example, the ways in which the researchers shared their knowledge to help the teachers ranged from assisting with instruction at times, to providing insights about narrative

descriptions which frequently led to suggestions for how to adjust instruction to achieve what a teacher desired.

3. A common language which both teachers and researchers can use must be established. Because researchers "talk funny" and teachers often use educational terms colloquially, a team of teachers and researchers must establish a language they both understand. The author refers to this as a consensual lexicon.

As an evaluation the effectiveness of this collaborative activity, Howey (1980) conducted a separate investigation to determine its effect upon the lives of the total-school faculty. He conducted open-ended interviews with the teachers, the principal, and the community coordinator concerning their perceptions of the experience. Drawing on these interviews, he determined that a general theme running through the findings was that school participants considered the experience to be among the most valid staff development experiences they had encountered. In addition, four characteristics emerged as being present and necessary for the conduct of whole-school collaborative inquiry of the sort investigated:

1. Researchers must be perceived as being nonthreatening, warm, easy-going, and approachable. As well, they must be perceived to be and demonstrate competence in understanding instruction and talking with teachers about their own classrooms. In addition, it is important that researchers who collaborate with teachers be organized, follow through and deliver on promises. Finally, researchers must be prepared to conduct their inquiry under prevailing conditions, and not alter these artificially.

2. Observations of teachers' instruction must be fedback to teachers within a relatively short time following the observation if the intent is to alter instruction. In particular, narrative descriptions of teachers' instruction are helpful since they provide an opportunity for teachers to review what occurred during instruction, frequently discovering facets of their instruction that they are unable to observe during the ongoing instructional process. Such feedback need not be formal and tied to prescription of what-to-do-next. The opportunity to talk with someone about their instruction appears to be as effective as formal feedback devices.

3. Inquiry must be carried out in a way that is consonant with what is known about effective adult development. Among these characteristics are involvement of teachers in central decision-making roles in the inquiry, accommodating individual differences among teachers, and providing all of the above in an unobstrusive, ongoing fashion across a sequenced, appropriate length of time.

4. Inquiry must be carried out in a way that is consonant with psychological growth theory. In particular, accommodation of four ingredients must be present: (1) a balance between action and reflection, allowing teachers time to assimilate what emerges from inquiry into their own classrooms; (2) frequent forms of challenge to provide cognitive dissonance so that teachers are confronted with their own beliefs about teaching; (3) personal support over time, so that while 1 and 2, above, are occurring, teachers do not feel abandoned but supported and encouraged to experiment and try new things; and (4) opportunities for role taking, or assuming distinctly new responsibilities, such as performing data analysis for their own and others' instructional protocols.

Collaborative Research with a School District

Problems at the school district level, which impact the lives of personnel from the central administration to the classroom teacher, also have been the basis for collaborative inquiry. Two examples are presented here.

Research Focused on Staff Development. Little (1981) reports a study conducted in collaboration with the central administration, principals, and teachers in a large urban school district undergoing desegregation. Outcomes of findings were aimed at improvement of educational practice and prospects for educational equity. Major questions for inquiry were generated from the first year's experience of the Department of Staff Development in the school district and focused on (1) relevance, e.g., practical relevance (accommodating teachers' and administrators' concerns), theoretical and policy relevance (achieving increased equity), and social/strategic relevance; and (2) mode, e.g., recognizing effects of the school as an organizational setting upon staff development as a change vehicle. Thus, the research attempted to gather ethnographic data aimed at (1) producing descriptive accounts accounts in order to lead to theoretical speculation and practical reform, (2) forming characteristic dimensions of the school setting and staff development to serve as a framework for further inquiry, and (3) elaborating and refining a matrix of central questions to guide subsequent research and practice.

Three pairs of schools and their faculties served as the sample. One elementary school and one secondary school were selected that fit each of three patterns: "high success" and "high involvement" with relation to achievement and staff development; "high success, low involvement;" and "low success, high involvement."

Collaboration involved several levels of school district personnel. Staff of the Department of Staff Development helped to formulate the questions. Principals at each of the schools assisted with eliciting participation of the faculty and participated in interviews. Teachers participated by being interviewed. Teachers were observed

during classroom instruction and during staff development meetings.

Data collection consisted of interviews with 14 members of the school district's central administration, 105 teachers, and 14 administrators in 6 schools, observations in the classrooms of 80 teachers, and observations in 6 staff development sessions (as well as in hallways, lunchrooms, faculty meetings, etc.). Analysis and interpretation of data and reporting of findings was accomplished by the researchers.

In addition to 6 case studies, an across-cases analysis revealed 45 propositions that hypothesize features of work relations in schools, and 26 propositions that center on the design, conduct, and influence of staff development programs. Summarized, these are:

1. The school as workplace reveals characteristics conducive to influential staff development. In particular, two norms appear critical to school success and bear upon the role and influence of staff development: (1) expectations of collegiality, wherein teachers perceive that work is shared and a spirit of closeness exists; and (2) expectations for continuous improvement, wherein continued connections between teaching and learning are pursued and operationalized.

2. Staff development programs are most influential when they possess four characteristics: (1) they are collaboratively planned by teachers and staff developers; (2) they are participated in collectively by an entire faculty (or groups within the faculty); (3) they focus upon relevance leading to improvement of practice; and (4) they allow for frequent opportunities for application of new practices and these are the case in a continuum of progression toward increased competence.

Research focused on school district goals. Hord (1981) describes a three year experience of an educational r and d center's efforts to collaborate with a single school district in the conduct of research. The purpose from the standpoint of the researchers was to gain further insight into the collaborative process when two institutions with differing goals are involved. This was proposed to be accomplished by assisting the school district to achieve its own goals. An ethnographic approach was used in order to document "what works" and "what doesn't work."

The school district's primary concerns centered around raising students' performance on achievement tests. Since the r and d center's research had revealed some promising practices toward achieving this goal, it was perceived that collaboration between the two institutions would achieve mutual goals.

The strategy agreed upon was to perform extensive analysis of the district's data from their previous evaluation studies. Using this analysis as a guide, promising teaching practices were to be identified to alleviate areas of weakness. A concrete set of strategies for teachers was to be produced and implemented, and the effects studied and evaluated.

Nord documents the circumstances which eventually led to disbanding the cooperative agreement, and reflects on lessons learned. Among these are:

1. Both institutions must share common needs and interests if true collaboration is to be achieved. Only in this way can each perceive that there is something to be gained by collaborating.

2. Participants must agree to devote the necessary time to joint endeavors. In this case, collaboration was perceived to take much longer since it requires time above and beyond usual activities for each participant.

3. Participants should be "high energy, reaching-out, action-taking" persons in order to ensure motivation and continued progress.

4. Frequent interaction among participants is necessary, both formally in meetings and as often as possible interpersonally.

5. Resources must be shared between institutions, including funds, staff, and other resources. Perceived rewards must be considered by participants to be worth the investment.

6. Participants who are most collaborative in activities between institutions probably are the same persons who are collaborative within their own institutions. These are the sorts of persons who should be singled out by participating institutions and assigned to the collaborative effort.

7. Control over the process must be shared among participants, and a certain amount of risk-taking must be exhibited by all.

8. Individuals from opposite institutions should be able to perceive collaborative situations and their potential effects on the other institution.

9. Leadership must be positive and shared.

10. Patience, persistence, and a willingness to share are essential characteristics of participants.

University-Based Collaborative Research

The notion of collaborating with schooling personnel for the purpose of conducting research is a recent but recurring interest of university professors. Four studies serve as examples of attempts to initiate this strategy. Two build upon the IR&DT model described above, and the other two provide variations. Findings about the collaborative research process that were derived from the studies are discussed below.

IR&D at Texas Tech University. Huling (1981) adopted the IR&DT model to devise a strategy for involving university professors in the School of Education, Teachers Corps staff, and teachers in local schools in collaborative research on teachers' instructional problems. Based on the premise that teachers do not use research findings and practices in their teaching, nor do they look to research as a means of solving educational problems, Huling proposed to:

1. determine whether participation in an IR&D project resulted in a significant change of teachers' concerns about the use of research findings and practices in their teaching; and

2. determine whether participation in an IR&D project resulted in teachers acquiring skills, interests, and attitudes which were likely to promote their future use of research findings and practices in teaching.

This study employed a pretest-posttest, control-group design, with 13 teachers in the treatment group and 18 teachers in the control group. Subjects in the treatment group were participants in an IR&D project sponsored by the local Teacher Corps project and were provided with approximately 10 hours of initial training in general research practices and procedures and in the essential features of Ir and d. They were then divided into 6 teams based upon their research interests and team member preferences. Each team consisted of one to three teachers, one university professor who served as the researcher, and one person from the Teacher Corps staff who served as the staff developer. Each team was charged with the responsibility of identifying a research question, conducting a research project using appropriate methodology and design, and collaboratively planning a means to disseminate its research findings.

Data were gathered through three questionnaires (Stages of Concern About the Innovation, Research-Teaching-Development Skills, Professional Development) as well as open-ended statements of concern. An analysis of covariance was performed on the questionnaire data, and the open-ended statements were analyzed using criteria outlined in A Manual for Assessing Open-ended Statements of Concern About the Innovation. In addition, informal interviews were conducted for the purpose of identifying teachers' attitudes about the use of research findings and practices in teaching.

Based upon the analyses and the informal interviews, the following conclusions were made:

1. Teachers who participated in an IR&D project demonstrated significantly greater changes in concerns about the use of research findings and practices in teaching than those who did not participate in an IR&D project.

2. Teachers who participated in an IR&D project demonstrated significantly higher research-teaching-development skills than those who did not participate in an IR&D project.

3. Teachers who participated in an IR&D project did not demonstrate significantly higher interest in professional development than those who did not participate in an IR&D project.

4. Teachers who participated in an IR&D project demonstrated a positive attitude about the use of research findings and practices in teaching.

Huling suggested that the implications of this study include:

1. The integration of the IR&D process into more traditional programs of staff development may increase the effectiveness of staff development by providing teachers with opportunities to develop research skills.

2. The addition of a graduate level course using the IR&D process in the course inventory of the university may be an additional means of addressing the research needs of public school practitioners and university research personnel.

3. The amount of field-based research conducted in the future may be increased by the continuation of an IR&D project, in that such a project provides university research personnel with more ready access to public school settings in which to conduct field-based research.

4. The working relationship of university and public school personnel may be enhanced through the continuation of IR&D project in which persons from both institutions work together to study questions of mutual concern.

IR&D on Schooling. Griffin, Lieberman, and Jacullo-Noto (1980) proposed to replicate the IR&DT model in three contexts not previously investigated. Underway since 1980 at Teachers College, Columbia University, under funding from NIE, the study is midway through its three-year span. The three contexts included in the study are:

1. A Teachers' Center involving four teacher specialists who are responsible for organizing and operating Teachers' Centers in their respective schools, and a researcher and staff developer/teacher trainer from Teachers College.

2. The Board of Cooperative Educational Services (BOCE), an intermediate education agency serving several school districts, involving four secondary teachers from two of these districts, a researcher from Teachers College, and a staff developer from the BOCE staff; and

3. A school district involving four elementary school teachers, a researcher who is a teacher with a completed Ph.D., and the assistant superintendent for curriculum and instruction as staff developer.

The three teams are charged with identifying a research topic of concern to teachers, producing a piece of research, and utilizing findings to develop staff development for others. At present, the teams are conducting their research, which was reviewed and critiqued externally by experts in order to assure quality.

During the course of each team's conduct of r and d, the Teachers College staff is collecting data concerning the characteristics of the participants, the nature of team interactions, and the rigor and usefulness of outcomes of the research and concomitant staff development. Findings will serve to inform further implementation of the IR&D strategy. Combined with findings from the Tikunoff, Ward, and Griffin (1979) study, information should be available to determine the characteristics of participants which would predict successful conduct of IR&D, as well as the nature of necessary technical assistance and resources.

In a preliminary analysis of the ID&RS participants' perceptions regarding research and development, Benjamin (1981) utilized a questionnaire which focused on four variables:

1. Interest in Subjects for Teacher Education. This questionnaire included pedagogical, organizational, and content area items which might be seen as possible subjects for in service or preservice teacher education. Participants were asked to indicate (a) the extent of their own interest in these areas, and (b) how interesting they believed that teachers in general perceived these areas to be.

2. Types of Activities for In-Service Education. This questionnaire included items designed to elicit respondents' perceptions regarding the types of activities they valued as inservice (development) activities.

3. Perceptions of Major Problems Facing Teachers. This questionnaire was designed to elicit what team members perceived to be problems facing teachers and teaching today. Participants were asked to list five major problems and to indicate what percentage of their peers would agree that each is a major problem.

4. Perception of Skills in Research and Development. This questionnaire was designed to find out how skilled each participant believed himself/herself to be in carrying our research and development.

Preliminary analyses of these questionnaires indicated that in the area of subject matter, participants' interests were highest in the ways students learn (learning styles, motivation, reinforcement, retention) and teacher-student interaction. Other areas of high interest were evaluating student learning, motivating students, new curricula; and classroom management.

In the area of activity types, all teams were most enthusiastic about the exchange of ideas with colleagues and visits to successful programs. These were followed by presentations by knowledgeable people, attendance at professional conferences, independent study or research including self-analysis of teaching effectiveness.

As perceived by the teams, the major problems faced by teachers included classroom management, discipline, morale, teacher stress, and instructional techniques. Funding and support/encouragement also were seen to be of major importance to a majority of teachers.

In the area of skills in r and d, all three teams perceived themselves as being more skilled in development than in research on schooling. Areas in which the teachers considered themselves to be most highly skilled were in the ability to lead group discussions, moderate meetings, or facilitate constructive interactions among personnel; the ability to prepare instructional materials appropriate to a student's developmental level; the ability to record classroom events accurately and objectively; and the ability to sequence learning activities to facilitate student learning in curriculum or a set of curriculum materials. In addition, teachers felt they were skilled in knowledge of procedures and steps used to develop curriculum materials and in knowledge various instructional approaches that might be incorporated into curriculum materials. Most team members (with the exception of the researcher) expressed greatest weakness in the areas of research design and statistical techniques.

School Practices Laboratory. The College of Education at the University of Arizona has organized a School Practices Laboratory in order to increase opportunities for research related to teacher education, to enhance the research competence of faculty members, and to extend and improve its relationship with the local educational community. Funding is from the university and was acquired by competition among professional schools at the university.

Three research teams supported by the Schooling Practices Laboratory worked toward these goals during the Spring of 1980, the first phase of Laboratory activity. the experiences of the research teams in Phase One provides information concerning the process of research collaboration within the college of education and between the college and local public schools.

Phase Two of the Schooling Practices Laboratory began in September 1980 and continued through May 1981. The decision to fund Phase Two teams for a full academic year was based on the experience of Phase One teams, which suggested that the teams would function more productively if they could work over a full school year. One team supported in Phase One was refunded in Phase Two; as a result, the benefits of longterm funding were investigated. An example of the research is represented by Staley (1980) discussed in the next section.

A report documenting findings of the project currently is under preparation. Hence, findings regarding use of collaborative research under this University-based project cannot be reported at this time.

Collaborative Action Research in Schools. Just underway is a collaborative study by professors at two universities Oja and Pine (1981) to investigate the relationship between developmental stages, collaborative action research in schools, and individual teacher change. Specifically, its purpose is threefold, as reflected in the following questions:

1. To what extent do teachers' stages of development (ego, moral, and conceptual) influence and affect the changes they undertake? The context of the changes?

2. How do the contextual variables of the school, i.e., role definition, rewards, expectations, norms, social climate, structure, etc. affect individual teacher change?

3. What is the role and impact of action research in the promotion of individual change? What is the impact of action research on teachers' psychological development? To what extent does action research provide support and challenge for individual teacher change?

According to Oja and Pine, these questions emanate from the literature which suggests that teachers define the nature and character of change in a school in qualitatively different ways depending upon the differences in their stages of development. Stages of development also appear to affect how they identify problems, conceptualize solutions, develop programs, and implement classroom innovations. Teachers' stages of development also appear to influence their abilities to assume multiple perspectives and to use a variety of coping behaviors in dealing with students, colleagues, administrators, and the unpredictable variables which impinge on their daily life in the school.

Thus, the Oja and Pine inquiry is directed not only by previous studies of developmental stages but also by studies of organizational theory and change and the dual concept of collaborative action research as a methodology for collecting data about teacher change and as a staff development intervention for promoting change.

The study is designed to reflect a multiple perspective which takes as its starting point the everyday life of classroom teachers. The study will report the life world of the teacher as perceived by teachers and told through their own action research studies. In addition to teacher action research data, pre-and posttest measures, interviews, and observations will be used. The collaborative action research process will be documented and described and the ways in in which the process affects teachers' perceptions of themselves, their writing, their peer relationships, their classroom behavior, and their teaching will be studied. Case studies of individual change will be developed which will describe the relationships between a teacher's stage of development and a variety of individual change variables. From the case studies, action research reports, interviews, and observations, school contextual variables will be identified and described relative to how they affect individual teacher change.

Preliminary findings in the first year of the study will be implemented through a teacher-designed change demonstration project in the second year. Continued documentation and data collection will provide information on the value of developmental stage theory in improving staff development practices and classroom instruction.

The value of this inquiry is perceived to lie in its power to generate implications for the design and implementation of staff development programs. Staff development involves individual change and Oja and Pine speculate that is their research about adult developmental stages, collaborative action research, and teacher change will lead to ways to make staff development more responsive and more relevant in promoting teacher growth and improving instruction.

Research Using the Collaborative Strategy

As indicated, practitioners collaborating in the conduct of educational research has re-emerged as a viable research process in only the past few years. Thus, while examples exist as collaborative research in general (see previous discussion) when the schooling practitioner participants are limited to teachers only a few pieces of such recent research have been completed and reported. Several reports that do exist in which the collaborative research strategy involved teachers are summarized below by topic of the research.

Classroom Intrusions

Behnke, et al., (1981) reported findings based on research conducted as a team participating in the IR&DT implementation study cited above. The purpose of the team's study was to investigate those events which disrupt classroom instruction and to determine the techniques which teachers use to cope with these distractions. The problem statement was derived, in particular, based on the teachers' perception that a useful approach to increasing the time available for instruction in their classrooms would be to eliminate as many things that were interfering with teaching and learning as possible.

In this study three types of observations occurred. Two nonparticipant observers and one participant observer collected data from different perspectives. One of the non-participant observers collected quantitative data about distractions and teachers' coping techniques using an observation checklist, while the other observer employed ethnographic techniques (taking detailed descriptive notes regarding teacher student interactions). The participant observer was the classroom teacher. The teacher's insights regarding distractions that occurred, the coping techniques that were utilized, and circumstances beyond overt classroom actions that may have influenced the occurrence of and response to distractions, were addressed in a daily log.

Eight primary grade teachers participated in the investigation. Four were involved as members of the collaborative r and d team from the identification of the problem and the generation of the research

design (Level 1 teachers) through the completion of the research and training reports. The remaining teachers (Level 2) were recruited from similar grade levels and schools to provide a larger population for data collection and participated only in data collection and analysis. As suggested by the types of data outlined above, the r and d team's intent was not only to identify the types of distractions and coping strategies that occurred but also to understand the contextual factors that might have influenced the observed behaviors so as to help teachers identify effective coping techniques given their specific classroom situations. In terms of data analysis and reporting, all Level I and II teachers were actively involved in interpreting both the quantitative and qualitative data sets. Level I teachers also wrote case studies describing the contextual, distraction, and effective and ineffective coping features in their and the counterpart Level II teachers' classrooms.

The team found that many distractions occurred, regularly in the classroom. In some classrooms, distractions occurred at a rate of one per minute. The kinds of distractions which occurred in the eight classrooms that were studied were similar. In addition, the eight teachers used similar coping techniques, but the frequency of use and the manner of utilization seemed to relate to the teachers' management styles and also to other contextual factors (students and environments).

The teachers in the study were receptive to intervention information regarding instructional changes that would reduce the distractions in their classrooms. They found some changes easy to incorporate (e.g., provision of additional pencils and erasers resolved one set of distractions; rearrangement of classroom furniture assisted in reducing the occurrence of other distractions). Other changes in the use of coping techniques were not too difficult to incorporate with concientious effort (e.g., using a signal to clue a child that his/her actions were inappropriate). Some new coping techniques were difficult to incorporate into the teachers' coping styles (e.g., not reminding a child of classroom rules.).

Conclusions related to the strengths and weaknesses of the research methods included strong statements by the teachers about the complementary nature of the qualitative and quantitative data sources. They felt these two sources tended to validated many findings which independently might not have been noted. In fact, some of the weaknesses in the data collection procedures were uncovered by the power of the quantitative-qualitative design.

Effects of Reducing Class Size

Filby, et al., (1980) studied the effects upon academic performance of students at the second grade when class size was reduced.

Following upon previous research on class size, including a meta-analysis of such studies commissioned by the project to Smith and Glass (1979), this study was conducted to investigate the application of concepts revealed in the meta-analysis to an explanation of class-size effects. Two sites were involved, one in Virginia and a second in

California, each consisting of two second-grade classes. Teachers and principals collaborated with researchers to assign some students randomly from each of the two classes to a third class, thereby reducing class size in the original classes from 20 to 13 in Virginia and 35 to 22 in California. Data collection consisted of naturalistic observation by nonparticipant observers, predefined quantitative observation related to specific categories of behavior, teacher journals, and interviews between teachers and researchers.

Collaboration of teachers consisted primarily of (1) assignment of student sample to reduced classes, (2) participation in data collection through keeping journals and interviews, and (3) informal discussions and meetings between teachers and researchers during data collection. Reciprocally, researchers made extra resources and assistance available to the teachers.

Analysis and reporting was accomplished by the researchers. Individual case studies were prepared for each of the classes. An across-cases analysis revealed four areas wherein general patterns prevailed:

1. Classroom management seemed easier and was more effective when class-size was reduced. Classes seemed to function more smoothly with reduced size, and fewer discipline problems were reported by teachers. Student attention rates were higher, and students were reported to be absent less often in the smaller classes.

2. Although teachers were required to teach a prescribed curriculum at both sites, some variation in implementation occurred. These varied across the teachers. Variations included diverting time from whole group to small group instruction; completing prescribed work more quickly; adding curriculum enrichment activities, or spending time in-depth with lessons; and including more time for informal interaction between teacher and students.

3. Increased occurrences of some form of individualization of instruction were observed. These ranged from increasing teacher's time with each student during seatwork to decreasing time for informal interaction. One teacher, in addition, supplemented group lessons with more individualized assignments. On the other hand, small groups which had been a feature of each of these classes did not change in structure or size.

4. Teachers' perceptions were that smaller class-size was more favorable. They cited the above three reasons, and in addition commented that they were more relaxed and felt better about what they were doing, particularly with having more time to spend with each child.

In discussing the outcomes of the research, Cahen, Filby, McCutcheon, and Kyle (in press) stated that a richer portrayal of the classroom was possible because the teacher perspective was included during data collection and interpretation. The noted that this portrayal was important to identifying as many changes as possible resulting from reduced class size. They also indicated that the degree and type of teacher collaboration can influence the research since the relevance of existing data sources may be questioned through interaction with the teachers.

Basic Skills Instruction in Process-Centered Teaching

Staley (1980) reports collaborative research focusing on how basic skills are delivered in a classroom in which process-centered teaching is the mode of instruction. This study derived from a set of studies undertaken by the Schooling Practices Laboratory at the College of Education, University of Arizona which was designed to engage professors and teachers in collaborative research as a way of bridging and strengthening relationships among members of the local educational community (see earlier discussion).

The objectives of the study were (1) to determine where, when, and how basic skills instruction occurred in a process centered classroom, (2) to acquire baseline data regarding this procedure for potential use in staff development, (3) to collect observational data for potential use by other researchers, and (4) to generate hypotheses for further study. The two teachers who were the subjects of this study team-taught in a second grade classroom. According to previous reports, they had been highly successful in teaching basic skills, but because basic skills instruction was integrated with all other instruction -- a basic tenet of the process-centered approach -- the teachers did not know when during a school day, and how, basic skills instruction took place. Data collection consisted of six days of nonparticipant observation over a two week period, with observers dictating their field notes for later transcription, and two days of videotaping classroom interactions. Analysis was accomplished by the university researchers and one of the two teachers.

While the findings were inconclusive with regard to where, when, and how basic skills were taught within this process-centered approach (the research team recognized that acquisition of such data was the next step to be accomplished, since the research methods employed did not provide appropriate data for answering their question), the study revealed weight cconditions under which it was possible for effective basis skills learning to occur in a process-centered approach. These are when:

1. Teachers use a variety of methods in appropriate ways at appropriate times.

2. That which is being taught is taught through the use of meaningful and purposeful context rather than in isolation of children's real-life interests and activities.

3. Teachers provide direct learning experiences with process skills of thinking and interacting with other individuals.

4. The teachers are able to establish a climate of trust, warmth, respect and caring among all members of the classroom.

5. The teachers are aware of and have concern for meeting individual needs of children.

6. There is a consistent push or pressure by the teachers to manage time so that learning is always occurring and the quality of this learning is as high as possible.

7. Teachers are able to create or modify curricular activities to meet the needs of their classroom and their students.

8. Teachers have a personal and professional commitment to help one another, to share freely of their ideas, and to work extra hours if necessary.

In his description of the research study, Staley included several comments that point out the sorts of analyses that were carried out and insights that were gained from the collaborative effort. The majority of these should not have occurred, had the practitioners not been on the research team. For example, he indicates that the participating teachers viewed the classroom videotapes with the researchers and described the kinds of things that were done earlier in the year that lead up to the instructional processes recorded on the tapes. In addition, collaboratory viewing and analysis of the videotapes by the teachers, principal, and two university researchers served to verify the credibility of the categories of cclassroom activities that contribute to the learning of basic skills that had originally been identified by the researchers. In turn, analysis of the transcript of the dialogue that occurred during these videotape viewings resulted in an unanticipated, but important set of findings. The team further identified several learning outcomes that are products of good process-oriented education but not standardized test scores, e.g., asking through provoking questions, finding and utilizing resources.

Teachers' Perceptions of Effective Bilingual Instruction

Tikunoff, et al., (1981) utilized teachers in the analysis of their data as one of several procedures in order to identify significant features of bilingual instruction.

This study is part of a large, field-based study of significant bilingual instructional features and their consequences for no or limited English-language proficient students (LEPs). the study currently is into its second phase and is being conducted at eight national sites at the elementary school level. Among the various data sets constructed for the 58 classrooms which participated in Part I of the study were narrative descriptions of teachers as they interacted with students during instruction. These protocols were constructed

from field notes dictated by nonparticipant observers based on two full days of classroom instruction. Setting protocols depicting the classroom setting and atmosphere in general also were included in this analysis.

Questions guiding the analysis in which the teachers participated were: (1) What features of bilingual instruction do practicing bilingual teachers in the study sample identify as being significant in their own instruction? in the instruction of others in the teacher sample? (2) What are the perceived consequences for LEPs of the significant bilingual instructional features identified by the teachers in the sample? (3) What is the frequency with which instructional features identified as significant by the sample teachers occurred during instruction when data were collected?

The teacher sample consisted of 58 bilingual teachers who were nominated at their respective sites as being among the most successful bilingual instructors at their site. Of these, 43 were able to accept the invitation to participate in analysis of their classroom data. Data analysis took place following the close of school in Summer 1981 at each of six sites. Teachers first read their own protocols, identifying and labeling those instructional features they deemed to be significant in terms of producing positive consequences for their LEPs. Then, they scored the protocols of two other teachers selected annonymously at their site. For these, they noted when significant features/consequences in thse classrooms were similar to and when they were different from those in their own class. The entire set of analyses then were returned to the research team, which conducted a constant comparative analysis across the entire set, deriving a set of 70 categories of significant features based on the language the teachers used to describe the features they identified. These 70 categories were further assigned to eight thematic groups. Finally, a subset of the research team conducted a second analysis across the protocols of all 58 classrooms to determine the frequency with which the teacher nominated features were observed to have occurred in the classrooms of the sample.

Analysis revealed that the significant bilingual instruction features which the teachers identified fell into three general groups:

1. Those features ascribed generally to effective instruction of basic skills. These are divided into five categories: (a) teacher maintains goal-oriented, business-like athmosphere, (b) teacher clearly presents information and communication, (c) classroom is managed effectively to obtain and maintain students' engagement in tasks, (d) students' work is monitored and appropriate adjustments made to ensure progress toward achieving success, and (e) students receive frequent feedback such that they know when they have achieved success or they know what they must do to achieve success. These constituted 79 percent of the nominations[1].

2. Language development techniques received the next highest number of nominations (17 percent). These focused on both formal development of students' language, i.e., lessons allocated to language development, and informal development of students' language, i.e., strategies for developing language during another lesson focus (such as insisting on full sentences when responding). In addition, language development focused both on English-language proficiency and on proficiency in the child's native language.

3. The third group of significant features focused on ethnolinguistically-relevant procedure. and behaviors (4 percent). These were characterized by teachers either as being in response to cultural cues initiated by students, or making use of knowledge of the culture for delivering and/or mediating instruction. (Because these frequently occurred during other instructional behaviors, only the most obvious were included in this latter group. This, it is likely that further analysis will reveal such features in greater depth.)

Speaking to the importance of teacher participation in the data analysis, Tikunoff, et. al, note that participation of the teachers allowed them to determine whether constructs would be identified that were important to teachers but missing from the data collection scheme designed by the researchers. This, in fact did occur in the ethnolinguistically-relevant procedures and behaviors group. Further, a lexicon of constructs or terms was developed that describes significant instructional features in teachers' own terms, thereby increasing the likelihood of other teachers understanding and recognizing the utility of the research outcomes.

Acquisition of Writing Literacy

Researchers at the Institute for research on Teaching, Michigan State University have been investigating the process of writing instruction for the past few years. Clark and Florio (1981) report one of the studies that has been conducted. This is a naturalistic study of schooling and the acquisition of written literacy. The questions that guided the research were:

1. What is the nature of the process of acquisition of written literacy as it is realized in school?

2. How does the acquisition process work in classrooms?

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1. It should be noted that instruction across this sample of teachers was delivered in English-only 65 percent of the time. The reminder of the time, instruction was delivered in the child's native language or bilingually.

3. What are the implications of this information for curriculum, instruction, and teacher education?

The study was conducted in two classrooms in a mid-Michigan suburban community. One classroom was a combined second/third grade, the other classroom was a sixth grade. The research team consisted of six researchers and a two-person team of teachers in each classroom. One teacher was the focal teacher.

The data sets included the following:

1. field notes of classroom participant observations;
2. periodic videotapes of classroom activity;
3. viewing sessions in which focal teachers discussed and analyzed videotapes made in their classrooms;
4. interviews with both teachers and students about the writing done in their cclassrooms;
5. weekly journals kept by focal teachers recording their thoughts about the process of writing in their classrooms; and
6. naturalistically collected samples of student writing.

Teachers collaborated in the research by serving as subjects, by collecting some data as participant observers in the instructional process, and by participating in data analysis and synthesis activities with the researchers. It is also important to note that the research team was of an interdisciplinary nature, involving researchers from differing perspectives so as to enhance the research.

Findings focused on the forms and functions of writing as an in-school instructional activity. The final report cites the following:

1. Although it is commonly lamented that children do not write in school and that teachers do not teach writing, we have observed that writing is ubiquitous there. If one does not limit one's view to formal instruction in writing, one finds that writing is, indeed, a commonly taken expressive option in the academic and social life of the classroom.

2. Writing has many forms and functions in the classroom. Related to these, children and teacher(s) play different roles depending on the social contexts in which writing is undertaken. Sometimes children are individual authors, sometimes they collaborate. Some audiences are present or near at hand. Others are absent. Sometimes the teacher is a helper, sometimes a critic, and sometimes an audience for student writing.

3. Key among the functions that writing served in the classrooms studied are the following:

a. writing to know oneself and others,
b. writing to occupy free time,
c. writing to participate in community, and
d. writing to demonstrate academic achievement.

Each of these functions of writing is an instance of writing in use within the classroom and/or wider social milieu. Familiarity with the variety of forms of writing available and the functions they can perform is a major part of what it means to have acquired written literacy. In the classroom there is much incidental acquisition of literacy as children and their teacher(s) engage in everyday social and academic life.

4. Writing is also taught explicitly and directly. However, it is not taught and/or planned for in terms either of discrete compositional or grammatical skills or in terms of individual lessons or activities. Rather more typical is the long-range planning for writing that results in the development of occasions for writing. Occasions for writing appear to be meaningful instructional units for teachers. They are typified by the following features:

   a. occasions for writing have a duration long enough to link multiple activities,
   b. activities constituting an occasion for writing arise in the context of or are planned with reference to classroom and community life,
   c. activities are linked thematically over time within an ocassion, and
   d. activities constituting an occasion are expressive in nature and may involve multiple modes on the continuum of oral-written expression (e.g., writing, drawing, speaking before an audience, reading, etc.).

5. Occasions for writing frequently involve skill integration both among the language arts of speaking, listening, reading and writing, and across subject areas. In addition they often integrate school and non school life experiences of the student writers.

6. Occasions for writing require a range of kinds of teacher planning including the ad-hoc seizing of opportunities to write in the course of everyday school life; proactive planning to develop ways to support and maintain expressive activities; post-hoc reflection upon classroom life and writing to identify potential occasions for writing

and ways to enrich them as opportunities to use multiple expressive forms and perform many communicative functions; and creations of curriculum for and with students in an instructional area marked by the absence of prepared materials, district mandates, or ready-made evaluation instruments. (Clark et al., 1981, pp. 22-23)

While the results of this study add much to the limited knowledge-base regarding writing and acquisition of written literacy, the implications proposed by Clark and Florio warrant attention here. They make the following recommendations:

1. That descriptive studies of school writing in settings different from those documented by this study should be undertaken.

2. More focused descriptive, correlational, or experimental studies of specific factors identified in this study as important elements in school writing be conducted.

3. Inquiry into ways of relating research on written literacy (its process and findings) to the practice of teaching should be made.

Throughout the research report, Clark and Florio mentioned data sources and findings that were accessible because of the teacher participants. For instance, they noted the issues with which the teachers wrestled explicitly or implicitly (underline emphasis is ours) such as the question of audience, the use of models, etc. They suggested that these issues constituted an answer to the question, "Why is writing difficult to teach in school?" They brought out the "sense-making" of participants in complex teaching and learning activities. They discussed the ways in which they used teacher thinking to obtain interpretive frameworks to apply to other inferences they themselves drew from various data sets. They pointed out the importance of grounding recommendations for the practice of teaching in the wisdom and experience of practitioners in order to facilitate future use of the processes of inquiry and the findings of research.

Whole-school Inquiry Concerning Common Issues

As noted earlier, Mitman, et al., (1981) conducted inquiry with an entire elementary school faculty. One piece of collaborative research which was accomplished within this inquiry included answering the questions of the 11 participating teachers. At the same time, this portion of the overall study focused on the general research question: When instructional events are studied from the ecological perpectives, what relationships appear to produce more successful outcomes for students?

The sample for this study consisted of 10 of the teachers and their 219 students. The data set consisted of classroom observations, some of which focused on the teacher and some on target students; teacher reports, teacher interviews, and student interviews. The classroom observation data consisted of narrative, descriptive protocols. The teacher reports consisted of self-reports by five of the participating teachers on the instructional events that were observed in which the teachers were given a list of questions about what they intended to accomplish in the lessons that were observed and asked to respond to these questions on their own while talking into an audio-cassette recorder. Five other teachers were interviewed by the researchers before and after the observed lessons. These interviews asked the teacher to describe the activities that were planned for the lesson and to comment on the skills students would be required to use, and how they expected various students to perform (pre event interview). In the post event interviews, teachers were asked to give their impressions of how the activities had gone and how particular students had performed. The students interviews were conducted with the target students. The interviews focused on gathering student perceptions about the lesson and their own performance.

A cross-classroom analysis of the questions of interest to the teachers revealed three emergent themes that were included in the data analysis. These were: (1) how teachers could encourage cooperative behavior among students, (2) how independent learning skills could be developed in students, and (3) how discussion skills could be developed in students so that they participated productively in class discussions. Using the above data sets, case descriptions were developed for each class. A cross-cases analysis revealed the following findings with relation to "what worked" to produce the three desired outcomes listed above. These were:

1. To establish cooperative behavior among students, teachers should:

   a. Establish formal, explicit task structures that require cooperative behavior;

   b. Specify who is to work with whom;

   c. Specify who is to do which part;

   d. Specify what is to be accomplished by each participant and all of the students in a group collectively.

2. To establish independent learning skills, teachers should:

   a. Establish specific assignments where independent learning skills are to be used;

b. Specify amount of work to be accomplished during in-class period of time;

c. Specify general objective students must work toward;

d. Allow students to independently select and research particular topic(s) or subassignment(s);

e. Teach students appropriate skills for finding and using best available resources.

3. To develop discussion skills, teachers should:

a. Plan for discussion period within context of recitation lesson;

b. Select topic related to the experiences of all children;

c. Teachers increase awareness of their own verbal behavior;

d. Encourage participation of all students.

The researchers also obtained answers to their questions. The results indicated that in classes where students showed the most competent participation -- by staying on task, interacting with the teacher and other students in appropriate ways, and producing a work product of acceptable quality -- several work-activity features were observed in combination that were not present in classes where students showed less competent participation. These features included: (1) the greater use of formal grouping arrangements so that students received more supervision and teacher assistance; (2) assignments where students were held accountable for a specific amount of work to be done during the period; and (3) assignments where teachers guided students through the lesson content.

From the collaborative research viewpoint, this study adds yet another dimension to the value of the research strategy per se. First, it shows that teachers and researchers need not necessarily seek answers to the same qustions. However, addition of the teachers' questions expands the data analysis to areas that might not otherwise be pursued. Second, the intent-actual-behavior-interpretation of what was accomplished that served as the nucleus of this study could not have been obtained without teacher collaboration. It represents the type of in-depth complex data to which we referred in the earlier discussion of the reasons for collaborative research.

How Children Learn to Read

A piece of collaborative research which has been underway for several years is being conducted by Chittenden and his colleagues

at ETS. The fundamental goal of the project, according to Chittenden, et al., (1977) is "to document and analyze the different ways that children move into the skills of beginning reading and progress toward reading proficiency." Along with documenting individual childrens' patterns in this regard, the study also hopes to develop a theoretical framework for explaining childrens' reading behavior and progress.

Teachers have been involved in planning and developing research procedures, in data collection, in data analysis, and in reporting findings. Thirty-seven teachers were involved the first year, and others have since joined the research effort. Teachers serve as participants on a team consisting of, besides themselves, an observer and a researcher. Data collection includes interviews with students, samples of their work, oral reading samples, general classroom observation, and interviews with teachers focusing on target students learning and development.

Writing Instruction at the Elementary School

Another collaborative study of writing instruction at the elementary school level has been conducted by Van Nostrand, et al., (1981). The focus of this study was upon the nature of writing instruction: how teachers instruct elementary school students in writing, what forms this instruction takes, what activities engage students during writing instruction, and what the effects of this instruction is upon student writing itself. As a result of the research, a descriptive model of writing instruction was developed which accounts for both the characteristics and the variations of this instructional process.

Researchers used a nomination procedure to identify nine successful teachers of writing. They were invited to participate in the research and became integral members of the research team. Besides the teachers, three researchers from a university comprised the team. Teachers collaborated by formulating data collection procedures, collecting data, analyzing data, and interpreting findings. The nature of the research required that data be collected and analyzed in cycles, each succeeding cycle building upon and informed by the previous cycle. In this way, implicit theories about writing instruction became public, and writing instruction practices and students' responses to the task demands inherent in these that were observed in earlier cycles provided information for categorization and testing in the next cycle of data collection. Across time, a set of constructs were developed, collaboratively derived by teachers and researchers, to describe the process of writing instruction and the activities engaged in by students during this instruction.

Among the wide variety of data analyses that were conducted by the collaborative team was identification of several kinds of student characteristics and juxtaposition of these with the writing outcome. The data that were derived supported the teachers' insights about the effects of the various characteristics on writing ability. Grade level was either unrelated to writing outcome or related so imprecisely that it appeared to be of little use in developing a scope and sequence for progressive control over the constraints on the writing process. Socioeconomic status and gender also appeared to have little effect on students' abilities. On the other hand, ability in reading, ability and mathematics, and writing at home were positively related to changes in the error patterns of the writing outcome.

The research effort also built around the investigation of ways to design effective writing instruction. Collaborative research was integral to the work to be carried out because the components of writing instruction in the classroom needed to be modified and manipulated to answer this question. Further, the researchers felt that it was important to have teachers describe what they did in writing instruction. These descriptions emphasized the recursive quality of this task. The researchers indicated that this critical feature of instruction probably would not have been found without such teacher input. Based on the data collected, the reserchers concluded that writing instruction is far more complex that in it generally thought to be, and this complexity lies in the responsive nature of the teacher's interaction with individual students at their tasks.

Summary

A summary of how teachers participated in the research process in the eight pieces of collaborative research presented above appears in Table 1.

The steps in the research process depicted in Table 1 begin with formulation of the research question and move to formulating data collection procedures, collecting data, analyzing it, interpreting and reporting findings, and implementing findings. In a "pure" form of collaborative research, the teacher would be involved in all these steps. As can be seen from Table 1, only the Behnke, et al., (1981) research involved teachers in each of these steps. A cautionary note is necessary, however. This table is merely descriptive and should not be misconstrued to be evaluative. There are good reasons for involving teachers at various stages of the conduct of a piece of research given the nature of the inquiry. Thus, we, by presenting this information, are not advocating that teachers ought to be involved at every stage.

Table 1

Collaborative Activities Involving Teachers in Research

STUDY	Teachers collaborated with researchers in the following:					
	Formulating Research Question	Formulating data collection procedures	Collecting data	Data analysis	Interpretation, reporting findings	Implementing findings
Staley (1980)	X			X		
Tikunoff, et al. (1980)				X		
Clark, et al. (1981)			X	X		
Behnke, et al. (1981)	X	X	X	X	X	X
Filby, et al. (1980)		X	X			
Witman, et al. (1981)	X		X	X		X
Chittenden, et al. 1980)		X	X	X	X	
Van Mostrand, et al. (1981)		X	X	X	X	

Nevertheless, the table reveals that in this collection of collaborative research studies, teachers most frequently were utilized as participants in the process of data analysis, and next most frequently for collecting portions of the data. This would indicate attendance to one of the propositions stated earlier, that teachers provide through their insights deeper understanding of both the context in which teaching and learning take place and the complexity of the classroom as a social-instructional system. In addition, teachers in half the studies contributed to formulating data collection procedures. This lends credence to another proposition stated earlier, that data collection procedures which are most naturalistic to the classroom will yield the most useful data for describing instructional practices in ways that teachers understand.

Only three studies used teachers to formulate the research questions. This is not surprising given that most research is a part of a researcher's career agenda or is formulated in the office of a funding agency. Another three studies used teachers to interpret and report findings. Given the busy lives of teachers, we propose that their involvement in this activity illustrates a high level of commitment. Finally, two studies utilized teachers to implement findings. In both instances, this was an integral part of their research design which is not an usual educational research requirement. This does not suggest that implementation requirements should not be included. It only states that, typically, they are not.

These data appear to support what we stated earlier: the definitions of collaborative research differ across the various studies. Where collaboration is utilized, it is grounded in the procedures used. In order to advance our knowledge regarding the payoffs of collaborative research, it is important to understand why and when

practitioners are included in the r and d process and to learn how they contributed to and/or detracted from the actual research. Only in the Behnke, et al., study do we know this information. (This was obtained because it was conducted during the study of the implementation of the IR&DT strategy.) By studying other collaborative re-research efforts, as is being done with the current IR&D on Schooling study at Teachers College and the Oja and Pine (1981) study cited earlier, additional information about the contributions of collaborative research will be obtained.

Conclusions

Based on the above review of the definitions of collaborative research being applied by various r and d teams, the reasons for conducting collaborative r and d, the studies that have been completed of various collaborative research processes, and the outcomes of a few illustrative research studies, in our opinion, the following conclusions may be drawn:

1. Because the forms of collaboration vary, the definition of what constitutes "collaboration" in research also varies. The definitions seem grounded by the participants and the institutions they represent, but generally four elements seem to be essential characteristics of the collaborative research process as it is defined in the "ideal sense": (a) researchers and practitioners work together at all phases of r and d process, (b) the research effort focuses on "real world" as well as theoretical problems, (c) mutual growth and respect occurs among all participants, and (d) attention is given to development and implementation issues from the beginning of the r and d process.

2. Research conducted toward understanding the collaborative process has focused on the process itself as well as upon the participants. Across this body of research a set of participant characteristics and process variables is emerging which predicts successful collaboration. Sufficient of these characteristics have been identified in multiple studies to recommend their use by others in organizing and operationalizing collaborative research activity. The include participant characteristics and previous experience, parity and communication issues, institutional relationship matters, and timeline issues. In addition, these studies reveal the sorts of resources and technical assistance that are necessary to sustain such an effort.

3. Research on instruction conducted utilizing the collaborative process wherein teachers and researchers (and sometimes others) are the participants is, at the very least, more difficult to accomplish than research conducted without this collaborative participation. Four characteristics are descriptive of research on which teachers have been collaborators:

(a) Teacher collaboration makes more possible investigating and understanding the complexity of the instructional process and the context in which classroom instruction occurs.

(b) While findings are not unusual when compared to noncollaborative research, they appear to be more robust and externally valid.

(c) Teachers perceive the findings from collaborative research in which teachers were participants to be more immediately useful because variables apparently are described and defined using terminology which seems more natural for the classroom teacher.

(d) Teachers who collaborated in the research utilize the data collection procedures and processes for inquiring into their own classrooms and making decisions about adjusting instruction.

(e) All participants obtain new insights and understandings about their and the other participants' roles in the educational process.

Finally, we would like to restate a recommendation that was made in the original IR&DT study:

> [Collaborative r and d] should be used for conducting a portion of the educational r and d effort at the national, state, and local education levels. The more the r and d outcomes are intended to result in improvements in education that are to be used by classroom teachers, the more important the use of the strategy becomes. (Tikunoff, Ward, and Griffin, 1979, p. 484).

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ANNOTATED BIBLIOGRAPHY

For use of the readers, the following annotations are provided for several of the references included in this paper.

BENNE, G., LABOVITZ, E. M., BENNETT, J., CHASE, C., DAY, J., LAZAR, C., MITTLEHOLTZ, D. Coping with classroom distractions. The Elementary School Journal, 81, 3, January, 1981.

In this article, the San Diego IR&DT team presents their study and the model which emerged during the implementation of the IR&DT strategy.

The purpose of this study was to investigate those events which disrupt classroom instruction and to determine the techniques which teachers use to cope with these distractions.

In this study three types of observations occurred. Two non-participant observers and one participant observer collected data from different perspectives. One of the non-participant observers collected quantitative data using an observation checklist, while the other observer employed ethnographic techniques (taking detailed notes). The participant observer was the classroom teacher. The teacher's insights regarding distractions and coping techniques utilized and circumstances beyond overt classroom actions were addressed in a daily log.

Eight primary grade teachers participated in the investigation. Four were involved in the identification of the problem and the generation of the research design (Level 1 teachers). The remaining teachers (Level 2) were recruited from similar grade levels and schools to provide a larger population for data collection.

In this study, it was found that there were many distrctions occurring regularly. In some classrooms, distractions were occurring at a rate of one per minute. The kinds of distractions which occurred in the eight primary grade classrooms were found to be very similar. The eight teachers of the study used similar coping techniques, but the frequency of use and the manner of utilization seemed to relate to the teachers' management styles and also to other contextual factors (students and environments).

The teachers in the study were receptive to intervention information. They found some changes easy to incorporate (e.g., additional pencils and erasers resolved one set of distractions; rearrangement of classroom furniture assisted in reducing the occurrence of other distractions). Other changes in the use of coping techniques were not too difficult to incorporate with conscientious effort (e.g., using a signal to clue a child that his/her actions were inappropriate). Other new coping techniques were very difficult, or not possible, to incorporate into the teachers' coping styles (e.g., not reminding a child of classroom rules).

Some additional conclusions relate to strengths and weakness of the research methods. One strong point was the complementary nature of the qualitative and quantitative data sources. These two sources tended to validate many findings, which independently might not have been noted. Actually, some of the weaknesses in the data collecting procedures were uncovered by the power of the quantitative-qualitative design.

BENJAMIN, S. Preliminary Analysis of IR&DS Participants' Perceptions Regarding Research, Development, and the Problems of Teachers. Report III. New York, NY: Horace Mann-Lincoln Institute, undated.

This preliminary report provides an overview of IR&DS participants' perceptions regarding subject and activities for in-service education and their own research and development skills. Three teams that are currently participating in the Interactive Research and Development on Schooling project at the Horace Mann-Lincoln Institute responded to four questionnaires in fa[illegible] 1980. The questionnaires were as follows:

1. Interest in Subjects for Teacher Education. This questionnaire included pedagogical, organizational, and content area items which might be seen as possible subjects for in-service or pre-service teacher education. Participants were asked to indicate (a) the extent of their own interest in these areas, and (b) how interesting they believed that teachers in general perceived these areas.

2. Types of Activities for In-Service Education. This questionnaire included items designed to elicit respondents' perceptions regarding the types of activities they value as inservice (development) activities.

3. Perceptions of Major Problems Facing Teachers. This questionnaire was designed to elicit what team members perceived to be problems facing teachers and teaching today. Participants were asked to list 5 major problems and to indicate what percentage of their peers would agree that each is a major problem.

4. Perception of Skills in Research and Development. This questionnaire was designed to find out how skilled each participant believes himself/herself to be in carrying out research and development.

Preliminary analyses of these questionnaires indicates that in the area of subject matter, participants' interest was highest in the ways students learn (learning styles, motivation, reinforcement, retention) and teacher-student interaction. Other areas of high interest were evaluating student learning; motivating students; new curricula classroom management.

In the area of activity types, all teams were most enthusiastic about the exchange of ideas with colleagues and visits to successful programs. These were followed by presentations by knowledgeable people; attendance at professional conferences; independent study or research including self-analysis of teaching effectiveness.

The major problems faced by teachers included classroom management, discipline, morale, teacher stress, and instructional techniques. Funding and support/encouragement were also problems seen to be of major importance to a majority of teachers.

In the area of skills in r&d, all three teams perceived themselves as being more skilled in development than in research on schooling. Other areas that teachers considered themselves most highly skilled were in the ability

to lead group discussions, moderate meetings, or facilitate constructive interactions among personnel; the ability to prepare instructional materials appropriate to a student's developmental level; in the ability to record classroom events accurately and objectively; in the ability to sequence learning activities to facilitate student learning in curriculum or set of curriculum materials. In addition, teachers felt they were skilled in the knowledge of procedures and steps in developing curriculum materials and in the knowledge of various instructional approaches that might be incorporated into curriculum materials.

Most team members (with the exception of the researcher) expressed greatest weakness in the areas of research design and statistical techniques.

CLARK, C.M., FLORIO, S. and others. Understanding writing in schools: A descriptive study of writing and its instruction in two classrooms. Final Report. East Lansing, MI: Institute for Research on Teaching, 1981.

This report details a naturalistic study of schooling and the acquisition of written literacy. The questions that guided the research were:

1. What is the nature of the process of acquisition of written literacy as it is realized in school?

2. How does the acquisition process work in classrooms?

3. What are the implications of this information for curriculum, instruction, and teacher education?

The study was conducted in two classrooms in a mid-Michigan suburban community. One classroom was a combined second/third grade, the other classroom was a sixth grade. The research team consisted of 6 researchers and a two-person team of teachers in each classroom. One teacher was the focal teacher.

The data sets included the following:

1. field notes of classroom participant observations;

2. periodic videotapes of classroom activity;

3. viewing sessions in which focal teachers discussed and analyzed videotapes made in their classrooms;

4. interviews with both teachers and students about the writing done in their classrooms;

5. weekly journals kept by focal teachers recording their thoughts about the process of writing in their classrooms; and

6. naturalistically collected samples of student writing.

While the results of this study add much to the limited knowledge-base of writing and acquisitions of written literacy, the implications proposed by Clark and Florio warrant highlight here. They make the following recommendations:

1. That descriptive studies of school writing in settings different from those documented by this study should be undertaken.

2. More focused descriptive, correlational, or experimental studies of specific factors identified in this study as important elements in school writing be conducted.

3. Inquiry into ways of relating research on written literacy (its processes and findings) to the practice of teaching should be made.

FARR, James A. Indigenous, Interactional Research. Paper presented at the Annual Meeting of the American Educational Research Association, New York City, 1971.

The objective of the inquiry was to develop indigenous research methodology aimed at minimizing the gap between educational research and practice. The intent was not to produce a final, or even a complete solution to the problem, but rather to suggest a procedure which, if employed, would provide partial closure.

Alternative ways to bridge the gap were examined, including various types of linkage systems as well as inductive and deductive approaches. Growing out of this examination, a process was developed which combined theoretical-deduction and empirical-deduction with a procedure which had its derivation in symbolic interactionist theory and methodology. The resulting combination, referred to as Indigenous, Interactional Research, was designed to maximize interction between the researcher and a practitioner in analyzing educational experiences.

In a field test of this process, groups of adult learners were videotaped in individualized programmed instruction, group process instruction, and a combination of the two. Inductive and deductive interactional analysis of the taped data resulted in the generation of decision and conclusion oriented hypotheses.

The primary advantages of Indigenous, Interactional Research would seem to be:

1. Such research is capable of producing indigenous educational hypotheses generated through inductive and deductive interaction between researchers and practitioners in relation to naturalistic educational data.

2. Hypotheses generated by this process would seem to be particularly valuable in understanding, controlling, and predicting educational practice.

3. Hypotheses produced by this kind of research can be used by practitioners in program planning (Coladarci and Getzels, 1955).

4. Causal explanations can be inferred from analyzing the type of non-experimental data dealt with in this type of research through the use of path analysis (Wittrock, 1969).

Indigenous, Interactional Research, as described in this paper, cannot be expected to completely close the gap between basic research and educational practice. By supplementing other types of basic and applied research, however, it can provide a way to minimize that gap.

FILBY, N, CAHEN, L., MCCUTCHEON, G. and KYLE, D. What Happens in Smaller Classes: A Summary Report of a Field Study. San Francisco: Far West Laboratory for Educational Research and Development, 1980.

Following upon previous research on class size, including a meta-analysis of such studies commissioned by the project to Smith and Glass (1979), this study was conducted to investigate the application of concepts revealed in the meta-analysis to an explanation of class-size effects.

Two sites were operationalized, one in Virginia and a second in California, each consisting of two second-grade classes. Teachers and principals collaborated with researchers to assign some students randomly from each of the two classes to a third class, thereby reducing class size in the original classes from 20 to 13 in Virginia and from 35 to 22 in California. Data collection consisted of naturalistic observation by nonparticipant observers, predefined quantitative observation related to specific categories of behavior, teacher journals, and interviews between teachers and researchers.

Collaboration of teachers consisted primarily of (1) assignment of student sample to reduced classes, (2) participation in data collection through keeping journals and giving interviews, and (3) informal discussions and meetings between teachers and researchers concerning the research during data collection. In addition, researchers made extra resources and assistance available to teachers.

Analysis and reporting was accomplished by the researchers. Individual case studies were prepared for each of the classes. An across cases analysis revealed four areas wherein general patterns prevailed:

1. Classroom management seemed easier and was more effective when class-size was reduced. Classes seemed to function more smoothly with reduced size, and fewer discipline problems were reported by teachers. Student attention rates were higher, and students were reported to be absent less often in the smaller classes.

2. Although teachers were required to teach a prescribed curriculum at both sites, some variation in implementation occurred. These varied across the teachers. Variations included diverting time from whole group to small group instruction; completing prescribed work more quickly; adding curriculum enrichment activities, or spending time in-depth with lessons; and more time for informal interaction between teacher and students.

3. Increased occurrences of some form of individualization of instruction were observed. These ranged from increasing teacher's time with each student during eatwork to increasing time for informal interaction. One teacher, in addition, supplemented group lessons with more individualized assignments. On the other hand, small groups which had been a feature of each of these classes did not change in structure or size.

4. Teachers' perceptions were that smaller class-size was more favorable. They cited the above three reasons, and in addition commented that they were more relaxed and felt better about what they were doing, particularly with having more time to spend with each child.

HORD, S. M. Working Together: Cooperation or Collaboration?[1] Austin, TX: Research and Development Center for Teacher Education, February, 1981.

In this paper, the author holds the premise that collaboration and cooperation, as descriptions of operational processes between either individuals or organizations are distinctly different. Each mode requires different kinds of input and each yields different sorts of return. Given the premise, questions to be asked are: how are they different; what requirements can be expected when using each model; what are the subsequent rewards; and, not to be overlooked, what is the value in distinguishing between them?

This paper briefly addresses these questions. The basic issue of whether or not collaboration is different from cooperation was confronted as the result of the analysis and synthesis of events in a case study on the "collaborative process." Because of different connotations people attributed to the words, expectations of what they meant as operational processes varied greatly within the same "collaborative project." Some people used the terms interchangeably, while others attributed very different qualities to the processes. Overall, while the participants' opinions were that the project had failed as a collaborative effort, they conceded that cooperation had occurred.

The case study supports the author's assumption that the success of a collaborative venture depends to a great extent on its clear definition of expectations by all parties involved, and a consequent agreement of the goal to be shared which will direct the process to its mutual conclusion. Without these two elements, true collaboration will not occur other than a fluke. Collaboration is not possible without cooperation, but the inverse it not true. Collaboration requires a great deal more, but ideally, its product yields more. Cooperation is possible with lesser effort because it does not require shared goals, although it also can be done more smoothly when expectations are clear. Collaboration and cooperation are both valued models, each serving a unique purpose, but in order to choose the appropriate model for the situation, their differences and their requirements must be understood. This paper offers a beginning to that understanding, and offers also a "rough draft" of models for employing either the cooperative or collaborative process.

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[1]Author's introduction.

HENEY, Kenneth R. Dimensions of Professional Development in Collaborative Inquiry: Perceptions of a Total School Faculty. San Francisco: Far West Laboratory for Educational Research and Development, 1980.

The author reports the results of his inquiry into perceptions of eleven elementary school teachers at a single school, their principal, and community coordinator in terms of their participation in collaborative inquiry (for a report of the actual inquiry conducted, see Mitman et al., 1981, and Morgendoller, 1981).

The entire school faculty participated with researchers from the Far West Laboratory for Educational Research and Development in collaborative research the objective of which was to inquire concurrently into all of the classrooms of a single elementary school in order to develop propositions for whole-school effects on students outcomes. The author interviewed the participants in an open-ended format to determine the effects of collaborative inquiry on their own instruction as well as their perceptions of research in general.

A general theme running through the findings is that school participants considered the experience to be among the most valid staff development experiences they had encountered. This was reported to the author in an unsolicited manner. In addition, four characteristics emerged as being present and necessary for the conduct of whole-school collaborative inquiry of the sort investigated:

1. Researchers must be perceived as being nonthreatening, warm, easy-going, and approachable. As well, they must be perceived to be and demonstrate competence in understanding instruction and talking with teachers about their own classrooms. In addition, it is important that researchers who would collaborate with teachers be organized, follow through, and deliver on promises. Finally, researchers must be prepared to conduct their inquiry under prevailing conditions, and not alter these artificially.

2. Observations of teachers' instruction must be fed back to teachers within a relatively short time following the observation if the intent is to alter instruction. In particular, narrative descriptions of teachers' instruction are helpful since they provide an opportu;nity for teacher to review what has occurred during instruction, frequently discovering facets of their instruction that they are unable to observe during the act of instructing. Feedback need not be formal and tied to prescription of what-to-do-next. The opportunity to talk with someone about their instruction appears to be as effective as formal feedback devices.

3. Inquiry must be carried out in a way that is consonnant with what is known about effective adult development. Among these characteristics are involvement of teachers in central decision-making roles in the inquiry; accommodating individual

differences among teachers; providing experiences which demonstrate, experiment, and feedback information about instruction; and providing all of the above in an unobtrusive, ongoing fashion across a sequenced, appropriate length of time.

4. Inquiry must be carried out in a way that is consonant with psychological growth theory. In particular, accommodation of four ingredients must be present: (1) a balance between action and reflection, allowing teachers time to assimilate what emerges from inquiry into their own classrooms; (2) frequent forms of challenge to provide cognitive dissonance so that teachers are confronted with their own beliefs about teaching; (3) personal support over time, so that while (1) and (2) are occurring, teachers do not feel abandoned but supported and encouraged to experiment and try new things; and (4) opportunities for role taking, or assuming distinctly new responsibilities, such as performing data analysis for their own and others' instructional protocols.

HULING, Leslie L. The Effects on Teachers of Participation in an Interactive Research and Development Project. Unpublished dissertation, Texas Tech University, August, 1981; and paper presented at Annual Meeting of the American Educational Research Association, New York City, 1982.

Based on the premise that teachers do not use research findings and practices in their teaching, nor do they look to research as a means of solving educational problems, Huling proposed to:

1. determine whether participation in an IR&D project results in a significant change of concerns of teachers about the use of research findings and practices in their teaching; and

2. determine whether participation in an IR&D project results in teachers acquiring skills, interests, and attitudes which will likely promote their future use of research findings and practices in teaching.

This study employed a pretest-posttest control group design, with 13 teachers in the treatment group and 18 teachers in the control group. Subjects in the treatment group were participants in an IR&D project sponsored by the local Teacher Corps project and were provided with approximately 10 hours of initial training in general research practices and procedures and in the essential features of IR&D. They were then divided into 6 teams based upon their research interests and team member preferences. Each team consisted of one to three teachers, one university professor who served as the researcher, and one person from the Teacher Corps staff who served as the staff developer. Each team was charged with the responsibility of identifying a research question conducting a research project using appropriate methodology and design, and collaboratively planning a means to disseminate its research findings.

Data were gathered through three questionnaires (Stages of Concern About the Innovation; Research-Teaching-Development Skills; Professional Development) as well as open-ended statements of concern. An analysis of covariance was performed on the questionnaire data; and the open-ended statements were analyzed using criteria outlined in A Manual for Assessing Open-ended Statements of Concern About the Innovation. In addition, informal interviews were conducted for the purpose of identifying teachers' attitudes about the use of research findings and practices in teaching.

Based upon the analyses and the formal interviews, the following conclusions were made:

1. Teachers who participated in an IR&D project did demonstrate significantly greater changes in concerns about the use of research findings and practices in teaching than those who did not participate in an IR&D project.

2. Teachers who participated in an IR&D project did demonstrate significantly higher research-teaching-development skills than those who did not participate in an IR&D project.

3. Teachers who participated in an IR&D project did not demonstrate significantly higher interest in professional development than those who did not participate in an IR&D project.

4. Teachers who participated in an IR&D project did demonstrate a positive attitude about the use of research findings and practices in teaching.

The implications from this study include the following:

1. The integration of the IR&D process into more traditional programs of staff development may increase the effectiveness of staff development by providing teachers with opportunities to develop research skills.

2. The addition of a graduate level course using the IR&D process in the course inventory of the university may be an additional means of addressing the research needs of public school practitioners and university research personnel.

3. The amount of field-based research conducted in the future may be increased by the continuation of an IR&D project, in that such a project provides university research personnel with more ready access to public school settings in which to conduct field-based research.

4. The working relationship of university and public school personnel may be enhanced through the continuation of an IR&D project in which persons from both institutions work together to study questions of mutual concern.

JACULLO-NOTO, Joann. Inside/Outside -- Who are the Experts? Collaborative Staff Development Models. Paper presented for the National Institute of Education, November, 1981.

This paper addresses the practical issues in designing collaborative models of staff development programs. The issues are:

- Who should be involved in a staff development program?
- How are teacher concerns determined in a staff development program?
- Is staff development professional or personal development?
- How can external assistance be used effectively?
- What are the positive effects of collaboration?

In line with these issues, Jaculio-Noto presents a review of the literature, as well as past and current research and draws the following conclusions:

1. Staff development needs to begin from the teacher's perspective.
2. Teachers need to participate from the needs assessment stage on through the process to evaluation.
3. Teachers need continued support, rewards, and the materials to bring about improvements in teaching and learning.
4. Teachers need to be made aware of their increasing competence as the staff development experience proceeds -- it is essential.
5. For successful staff development, it is essential how one balances the expertise of teachers and administrators inside the district with that of external assistance agents.
6. Assessing and then tapping the strengths of the district is the first step to sorting out what external help is needed, thus allowing the district to engage external assistance agents in a collaborative and productive manner.
7. Knowing the teachers' needs from their own voices gives the district a powerful base from which to enter a collaborative arrangement. These arrangements require frameworks and guidelines developed by the participants.

LIEBERMAN, A. Report of Proceedings of Seminar on Adaptations of Interactive Research and Development on Teaching. New York, NY: Teachers College, Columbia University, 1979.

This paper includes the history and background of Interactive Research and Development on Teaching (IR&DT) and the circumstances under which the need for a discussion and exploration of the adaptation of the strategy arose.

It further describes the procedures and substance of a two-day seminar at which problems and possibilities for the use of the IR&DT strategy were discussed. Participants included a university professor, an associate superintendent of an urban district, a teacher association leader in a rural setting and an Associate Dean for Field Services.

The paper draws together recurrent themes addressed by the participants which appear to be considerations to be attended to in various adaptations of the strategy. The recurrent themes were regional differences, contextual differences, role adaptations, differences of purpose, reward structures, and extension of IR&DT.

Lieberman concludes this paper with specific recommendations:

1. IR&DT teams be extended to include other contexts in addition to those in the original study.

2. Roles other than teacher be studied to extend the r&d interaction (e.g., supervisors, teacher trainers, principals).

3. Commitments of the cooperating institutions be made explicit (substitute time, course credits, services, tenured professors, etc.).

4. Initiating institutions show some evidence of experience with collaboration.

5. The roles of researcher and trainer/developer be extended to include a larger pool (e.g., graduate students as researchers, supervisors as developers).

6. Communication of intra-school and inter-institutional linkages be clarified (e.g., regular meetings, newsletters).

7. Purposes for conducting IR&DT be clear (e.g., school improvement, new knowledge, new roles, etc.).

8. Some effort be made to protect IR&DT from being usurped by other institutional demands (e.g., programs, mandates).

9. Provisions be made for technical assistance during all phases of IR&DT.

10. Provisions be made for advisory panel to review and to communicate with IR&DT team at regular intervals.

11. No less than <u>two</u> team members per site be selected to avoid isolation.

12. Orientation to IR&DT be given more time (up to 5 days).

13. Provisions for initiation of IR&DT be considered in light of school calendar (avoid September "start up").

14. Where possible, <u>interactiveness</u> be extended between IR&DT teams.

LITTLE, Judith W. School Success and Staff Development in Urban Desegregated Schools: A Summary of Recently Completed Research. Paper presented at the Annual Meeting of the American Educational Research Association, Los Angeles, California, 1981.

Collaborative research to examine the nature, role, and impact for staff development in an urban desegregated school district is the focus for this research. Outcomes of findings are aimed at improvement of educational practice and prospects for educational equity. Major questions for inquiry were generated from the first year's experience of the Department of Staff Development in the school district and focused on issues of relevance, e.g., practical relevance (accommodating teachers' and administrators' concerns), theoretical and policy relevance (achieving increased equity), and social/strategic relevance; and mode, e.g., recognizing effects of the school as an organizational setting upon staff development as change vehicle and to inform teachers' and administrators' concerns for improvement. Thus, the research attempted to gather ethnographic data aimed at (1) producing descriptive accounts in order to lead to theoretical speculation and practical reform, (2) forming characteristic dimensions of school setting and staff development to serve as a framework for further inquiry, and (3) elaborate and refine a matrix of central questions to guide subsequent research and practice.

Three pairs of schools and their faculty served as the sample. One elementary school and one secondary school were selected that fit each of three patterns: "high success" and "high involvement" with relation to achievement and staff development; "high success, low involvement;" and "low success, high involvement."

Collaboration involved several levels of school district personnel. Department of Staff Development helped to formulate the questions. Principals at each of the schools assisted with eliciting participation of the faculty and participate in being interviewed and observed during classroom instruction and during staff development meetings.

Data collection consisted of interviews with 14 members of the school district's central administration, 105 teachers, and 14 administrators in six schools; observations in the classrooms of 80 teachers, in six staff development sessions (as well as in hallways, lunchrooms, faculty meetings, etc.). Analysis and interpretation of data and reporting of findings was accomplished by the researchers.

In addition to six case studies, an across-cases analysis revealed 45 propositions that hypothesize features of work relations in schools, and 26 propositions that center on the design, conduct and influence of staff development programs. Summarized, these are:

1. The school as a workplace reveals characteristics conducive to influential staff development. In particular, two norms appear critical to school success and bear upon the role and influence of staff development: (1) expectations of collegiality, wherein teachers perceive that work is shared and

a spirit of closeness exists; and (2) expectations for continuous improvement, wherein continued connections between teaching and learning are pursued and operationalized.

2. Staff development programs are most influential when they possess four characteristics: (1) they are collaboratively planned by teachers and staff developers; (2) they are participated in collectively by a faculty (or groups within the faculty); (3) when the focus is upon relevance leading to improvement of practice; and (4) when they allow for frequent opportunities for application of new practices learned, and when these can be cast in a continuum of progression toward increased competence.

MERGENDOLLER, John R. Mutual Inquiry: The Role of Collaborative Research on Teaching in School-Based Staff Development. A paper presented at the Annual Meeting of the American Educational Research Association, Los Angeles, California, 1981.

This paper reflects on the two-year experience of a research team from the Far West Laboratory for Educational Research and Development collaborating with an entire elementary school faculty in the conduct of instructional research. Purposes of the research are described in Mitman et al. (1981) and an evaluation of the process in terms of its effect on the faculty is described in Mowry (1980).

Collaborative research is defined by the author as "research conducted inside the classroom by two or more individuals with different role orientations and professional concerns. In its most basic form, [it] involves the mutual inquiry of a researcher and a teacher into educational problems of interest to both." In this research, eleven elementary school teachers at a single school each identified problems of concern to their teaching, and researchers collected ethnographic data during instuction in their classes to develop data for analysis. Thus, collaboration of teachers included identification of the questions, collecting data (in terms of dictated reflections and participation in interviews), and using data in both narrative and reduced form to make decisions about adjusting instruction, particularly with regard to alleviating problems which led to their initial concerns.

The requirements for this sort of collaboration, according to the author, are:

1. Parity must be established and maintained between/among teachers and researchers. Parity is designed as "the establishment of mutual respect . . . when no set of professional capabilities [among teachers and/or researchers] is thought to be superior to those held by other members of the research team, parity has been established.

2. Reciprocal relationships must be established and maintained. Such relationships demonstrate a natural give-and-take, or as Webster states, there is "a mutual exchange of privileges in such relationships." Reciprocity occurs more frequently when each member of a research team has something valued to share with others. Examples cited ranged from assisting with instruction at times, to providing insights about narrative descriptions which frequently led to suggestions for how to adjust instruction to achieve what a teacher desired.

3. A common language which both teachers and researchers can use must be established. Because researchers "talk funny" and teachers often use educational terms colloquially, a team of teachers and researchers must establish a language they both understand. The author refers to this as a consensual lexicon.

MILLER, D. B. Roles of naturalistic observation in comparative psychology. American Psychologist, March, 1977.

Comparative psychology is replete with laboratory investigations of animal behavior to the conspicuous exclusionn of naturalistic observations. In this paper, five roles, with corresponding examples, are considered by which systematic, quantified field research can augment controlled laboratory experimentation in terms of increasing the validity of the design, execution, and interpretation of laboratory studies.

The roles include:

1. Studying nature for its own sake.

2. Using nature as an initial starting point from which to develop a subsequent program of laboratory research.

3. Using nature to validate or add substance to previously obtained laboratory findings.

4. Obtaining from nature information pertaining to species variables that will subsequently increase the efficient utilization of animals in the laboratory.

5. Using the field as a naturalistic "laboratory" to test some hypothesis or theoretical concept.

Miller concludes by saying that experience is a key factor in effectively studying animals in the field. The more experience an investigator has, the more likely he/she is to avert or at least cope with various methodological concerns, practical drawbacks, and inconveniences, many of which are unique to naturalistic research (e.g., . . .having to settle for relatively small sample sizes and lack of certain control groups; . . .having one's schedule run entirely by the animals, instead of vice versa; . . .minimizing one's own interference with nature by constructing a "blind"; making frequent reliability checks for inter- and intraobserver agreement; and generaly, always being prepared for the unexpected!).

MITMAN, A. L., MERGENDOLLER, J. R., WARD, B. A., TIKUNOFF, W. J. Verification Inquiry, Volume VI, Ecological Case Studies of Classroom Instruction In a Successful School. San Francisco, CA: Far West Laboratory for Educational Research and Development, 1981. EPSSP-81-15.

This volume is one in a series of reports of a multi-faceted study which examined and described the successful schooling practices at a single elementary school in the San Francisco Bay Area. The goal of the Ecological Perspectives for Successful Schooling Practices Project is to analyze school settings where successful instruction and educational practices are occurring and describe these setting so that they may be implemented by other educational practitioners. In addition, the EPSSP project seeks to work in collaboration with school people to improve students' educational experiences and make less successful schools more successful.

The Verification Inquiry, overall, sought to answer five sets of questions. In this Volume, Mitman reports the findings which focused on the question: When instructional events are studied from the ecological perspectives, what relationships appear to produce more successful outcomes for students.

The sample for this study consisted of 10 teachers and their 219 students. Two target students were observed in five of the classrooms and four target students were observed in each of the five remaining classrooms. The data set consisted of classroom observations, teacher reports, teacher interviews, and student interviews. The classroom observation data set consisted of narrative, descriptive protocols. The teacher reports consisted of self-reports by five of the participating teachers on the instructional events that were observed. Teachers were given a list of questions and asked to respond to these questions on their own while talking into an audio-cassette recorder. In addition to these self-reports, teachers were also asked to report their impressions of all of their currently enrolled students at the beginning of the school year. For the five participating teachers who did not record their own reports, investigators interviewed these teachers before and after the observed events. These interviews asked the teacher to describe the activities that were planned for the period and to comment on the skills students would be required to use and how they expected the class to perform (pre-event interview). In the post-event interviews, teachers were asked to given their impressions of how the activities had gone and how particular students had performed. The student interviews were conducted with the target students. In half the classes interviews focused on gathering student perceptions about classroom organization. In the remaining classes, the interviews focused on gathering student perceptions about the event and their own performance.

Before detailed case studies are presented, Mitman provides a summary and conclusions section comparing the findings of this study with that of other researchers (Bossert, Doyle, Good, Berliner, Stallings, Jackson, Mehan).

STALEY, Frederick. An ethnographic pilot study to investigate process-centered teaching. In Cohen, Leonard S. and Altman, Leslie, Eds. The Schooling Practices Laboratory, Phase One, Tempe, Ariz.: College of Education, University of Arizona, 1980.

The objectives of this study were (1) to determine where, when, and how basic skills instruction occurred in a process-centered classroom, (2) to acquire baseline data of this procedure for potential use in staff development, (3) to collect observational data for potential use by other researchers, and (4) to generate hypotheses for further study. The two teachers who were the subjects of this study team-taught in a second grade classroom. According to previous reports, they had been highly successful in teaching basic skills, but because basic skills instruction is integrated with all other instruction -- a basic tenet of the process-centered approach -- the teachers did not know when during a school day and how basic skills instruction took place.

This study derived from a set of studies undertaken by the Schooling Practices Laboratory at the College of Education, University of Arizona to engage professors and teachers in collaborative research as a way of bridging and strengthening relationships among members of the local educational community.

The two teachers and their students served as subjects. Data collection consisted of (1) six days of nonparticipant observation over a two-week period, with observers dictating their field notes for later transcription; and (2) two days of videotaping classroom interactions. Analysis was accomplished by the university researchers and one of the two teachers.

While the findings were inconclusive with regard to where, when, and how basic skills were taught within this process-centered approach (the research team recognizes that this is the next step, since the research methods employed did not provide appropriate data for answering their question), the study revealed eight conditions under which it is possible for basic skills learning to result in a process-centered approach. These are:

1. Teachers use a variety of methods in appropriate ways at appropriate times.

2. That which is being taught is taught through the use of meaningful and purposeful contexts rather than in isolation of children's real life interests and activities.

3. Teachers provide direct learning experiences with process skills of thinking and interacting with other individuals.

4. The teachers are able to establish a climate of trust, warmth, respect and caring among all members of the classroom.

5. The teachers are aware of and have concern for meeting individual needs of children.

6. There is a consistent push or pressure by the teachers to manage time so that learning is always occurring and the quality of this learning is as high as possible.

7. Teachers are able to create of modify curricular activities to meet the needs of their classroom and their students.

8. Teachers have a personal and professional commitment to help one another, to share freely of their ideas and to work extra hours if necessary.

TIKUNOFF, W. J., WARD, B. A. and GRIFFIN, G. A. Interactive Research and Development on Teaching, Final Report. San Francisco, CA: Far West Laboratory for Educational Research and Development, 1979. IR&DT #79-11.

Interactive Research and Development on Teaching (IR&DT) was proposed by Ward and Tikunoff in 1975 as an alternative educational r&d strategy. The basis for this recommendation built from demonstrated inadequacies of the characteristics and outcomes of the commonly-used linear r&d strategy.

The National Institute of Education funded an investigation of the implementation of the IR&DT strategy in 1975. The purpose of this investigation was to:

1. Investigate and understand the process of implementing IR&DT in order to identify and describe the requirements and characteristics for "successful" use of the strategy;

2. determine whether the r&d outcomes that result from an IR&DT approach provide important and useful new information, procedures, and processes to the field of education while successfully achieving (maintaining) commonly accepted r&d standards; and

3. determine what changes, if any, in persons and institutions might result from participation in IR&DT.

The underlining principles of the IR&DT strategy places teachers, researchers, and trainer/developers together to inquire as a team into those questions, problems, and concerns of classroom teachers. An IR&DT team is charged with the task of conducting research and concurrently attending to the development of training based both on their research findings and the research methods and procedures employed in their study. Decisions are made collaboratively.

In this study, the IR&DT strategy was implemented at two sites--one in an urban setting in California, the other in a rural setting in Vermont. The settings were selected purposely in order to observe IR&DT implementation under diverse circumstances.

The California site was located in the San Diego Unified School District, and consisted of four teachers, one researcher, and one trainer/developer, all on the school district staff. The team focused its research on the strategies and techiques which classroom teachers use to cope with distractions to classroom instruction and the effectiveness of these techniques. The data set included quantitative coding of occurrences of distractions and coping strategies, narrative descriptions of teacher-student interactions, and other relevant context information for each classroom.

The Vermont site included two cooperating institutions--the University of Vermont and the Underhill Independent School District. This team included three teachers, one researcher, and two trainer/developers. The team focused its research on the relationships between the mood of the teacher and the teacher's classroom supportive instructional behavior and the nature of these relationships. The data set included narrative descriptions of what occurred in each classroom during the reading lesson and each teacher's most difficult time of the day, teacher ratings of a mood adjective checklist,

and observer-teacher interviews.

Six notable findings emerged from this implementation study. These are as follows:

1. The characteristics, skills, and previous experience of participants appear to affect the degree to which IR&DT is implemented with high occurrence of/congruence with the essential features of the strategy. The presence of these features, in turn, is related to the rigor and usefulness of the r&d outcomes.

2. Commitment to educational r&d and previous involvement in such efforts by the participating institutions also influences the conduct of IR&DT.

3. Orientation to IR&DT is important. It should bwe designed to fit the needs and context of the participating people and institutions. If the required participants skills do not exist, training in these skills should be included.

4. Technical assistance should be available throughout an IR&DT effort.

5. The typical time lage between research and development can be reduced with the IR&DT strategy.

6. IR&DT implementation can be cost-effective.

Based on the overall findings and the information obtained in the IR&DT implementation study, the following recommendations are made:

1. The IR&DT strategy should be used for conducting a portion of the educational r&d effort at the national, state, and local education levels. The more the r&d outcomes are intended to result in improvements in education that are to be used in classrooms by teachers, the more important the use of the strategy becomes.

2. Site and participant selection and/or training of participants prior to initiating IR&DT efforts are important antecedents to enactment of IR&DT in an "ideal" form. This is particularly important because ideal conduct of IR&DT is necessary for achievement of r&d outcomes that are more rigorous and more useful than "typical" educational r&d products.

3. Some form of external review and assistance is recommended for all IR&DT efforts.

4. Changes in resource allocations (funding/budgetary policies) of federal, state, and local educational agencies will be necessary in order to utilizae IR&DT extensively.

5. IR&DT should be implemented and studied in settings with participants other than those involved in the original implementation.

TIKUNOFF, William J. and FISHER, C. W., WARD, B. A., ARMENDARIZ, J. C., GEE, E., PHILLIPS, M., VERMAZZA, M., BAKER, C., BOOTHROYD, M., VAZQUEZ, J. A., ROMERO, M., VILLEGAS, A., LUM, J., GUTHRIE, L., MACIAS, A. Teacher perceptions of the successful bilingual classroom. In Preliminary Analysis of the Data for Part I of the SBIF Study. San Francisco: Far West Laboratory for Educational Research and Development, 1981.

This study is part of a large, field-based study of significant bilingual instructional features and their consequences for no or limited English-language proficient studnets. The study currently is into its second phase and is being conducted at eight national sites, each inquiring into a different ethnolinguistic population of students at the elementary school level. Among the various data sets constructed for the 58 classrooms which participated in Part I of the study were narrative descriptions of teachers as they interacted with students during instruction. These protocols were constructed from field notes dictated by nonparticipant observers over two full days of instruction. Setting protocols depicting classroom activities and atmosphere in general also were included in this analysis, and these were produced over another two days.

Questions guiding this analysis were: (1) What features of bilingual instruction do practicing bilingual teachers of the SBIF sample identify as being significant in their own instruction? in the instruction of others in the teacher sample? (2) What are the perceived consequences for LEPs of significant bilingual instructional features identified by teachers of the SBIF sample? (3) What is the frequency with which instructional features identified by the SBIF sample teachers as being significant were observed to have occurred during instruction when data were collected?

The sample consisted of 58 bilingual teachers who were nominated at their respective sites as being among the most successful bilingual instructors at their site. Of these, 43 were able to accept the invitation to participate in analysis of their classroom data. Data analysis took place following the close of school in Summer 1981 at each of six sites. Teachers first read their own protocols, identifying the labeling those instructional features they deemed to be significant in terms of producing positive consequences for their LEPs. Then, they scored two sets of other teachers' protocols selected anonymously at their site. For these, they noted when features/consequences were similar and when they were different. The entire set of analyses then were returned to the research team, which conducted a constant comparative analysis across the entire set, deriving a set of 70 categories from the teachers' language. These were further assigned to eight thematic groups. Finally, a subset of the research team conducted a second analysis across the protocols of all 58 classrooms to determine the frequency with which the nominated features were observed to have occurred in the classrooms of the sample.

Analysis revealed that teachers identified as significant for bilingual instruction features which fall into three general groups:

1. These features ascribed generally to effective instruction of basic skills. These are divided into five categories: (a) teacher maintains goal-oriented, business-like atmosphere,

(b) teacher clearly presents information and communication, (c) classroom is managed effectively to obtain and maintain students' engagement in tasks, (d) students' work is monitored and appropriate adjustments made to ensure progress toward achieving success, and (e) students receive frequent feedback such that they know when they have achieved success or they know what they must do to achieve success. These constituted 79 percent of the nominations.[1]

2. Language development techniques received the next highest number of nominations (17 percent). These focused on both formal development of students' language, i.e., lessons allocated to language development, and informal development of students' language, i.e., strategies for developing language during another lesson focus (such as insisting on full sentences when responding). In addition, language development focused both on English-language proficiency, and on proficiency in the child's native language.

3. The third group concerns ethnolinguistically-relevant procedures and behaviors (4 percent). These were characterized by teachers either as being in response to cultural cues initiated by students, or making use of knowledge of the culture for delivering and/or mediating instruction. (Because these frequently occurred during instruction, only the most obvious were included in this group. Thus, it is likely that further analysis will reveal them in greater depth.)

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1. It should be noted that instruction across this sample of teachers was delivered in English-only 65 percent of the time. The remainder of the time, instruction was delivered in the child's native language or bilingually.

VAN NOSTRAND, A.D., PETTIGREW, J., & SHAW, R. Writing Instruction in the Elementary Grades: Deriving a Model of Collaborative Research. Providence, RI: Center for Research in Writing, 1980. ERIC No. ED 203 378

In this collaborative research study naturalistic observations were used to address three questions:

- What is writing instruction in the elementary schools?
- What forces directly influence this writing instruction?
- How can collaborative research be used to define effective writing instruction?

The team consisted of 8 teachers from grades 3 through 6 and who also acted as non-participant observers in one another's classroom; five other non-participant observers who were teachers or researchers, or in some cases, both; the principal investigator, a consultatn from the Rhode Island Department of Education, a project coordinator, and four research assistants.

The primary sources of data included the observers' classroom notes which were agumented by information obtained from bi-weekly conferences. The teachers provided data sources as observers and observed, as respondents to questionnaires, as authors of writing assignments, and as diarists of their own teaching. Additional data sources included the legislative and administrative records which inform teaching procedures, instructional materials which the teachers used, the students, and the students' writing samples.

On the basis of this study a descriptive model of writing instruction in grades 3-6 was developed. Through this model it is possible to describe the activities that may occur in a writing lesson and the factors that influence the selection of activities. Of major importance to writing instruction is the teacher's decision-making process and interaction with students throughout the lesson. The decision-making process is recursive, most likely because writing itself is a recursive process. Through this model it was possible to operationally define effective writing instruction in terms of the decision-making process of the teacher and the nature of the teacher-student interactions during the lesson. A support system is needed to guide teachers in this recursive decision-making process. The model developed in this study may be useful in designing such a system, but should be investigated further. In particular, future research should be directed at further study of the instructional activities in the model.